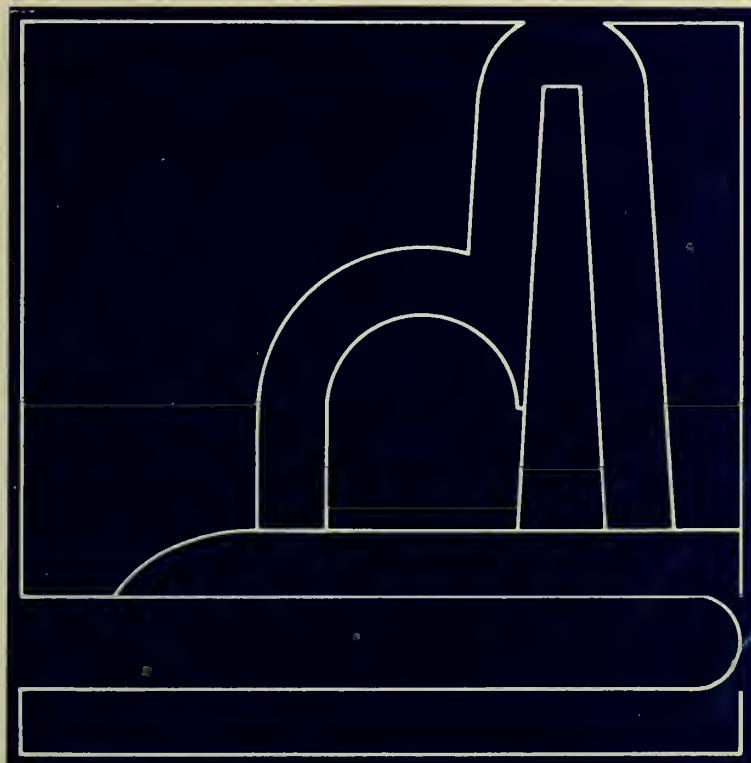


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Nuclear Reactors Built, Being Built, or Planned



Technical Information Center
U. S. Department of Energy

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Manager
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Anne M. Goulden
Managing Editor

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Revisions of this report are published twice a year; the information presented is current as of June 30 or December 31.

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UNIVERSITY RESEARCH AND TEACHING REACTOR: A reactor located at a university and usually operated for the primary purpose of training in the operation and utilization of reactors and for instruction in reactor theory and performance. (Part I, Sec. 3E, and Part IV, Sec. 2C)

SPECIAL TEST REACTOR: A reactor designed for special testing purposes. (Part III, Sec. 3A)

CRITICAL FACILITY: A reactor capable of sustaining a nuclear chain reaction operating at extremely low power (a few watts) and designed to determine a critical mass, neutron-flux distribution, and other characteristics of a flexible arrangement of nuclear fuel, construction materials, coolant, and other reactor components. Fluid critical facilities are used to explore the critical masses of various concentrations of solutions in differing geometries. Metal critical assemblies are used to investigate the variations in heterogeneous cores. The tabulation of these facilities in Part V (pp. 36-37) excludes those which have been operated and subsequently dismantled.

The abbreviated listings in the principal nuclear contractor column refer to the technical organization assigned primary responsibility for design and/or fabrication of the reactor system. The spelled-out forms for those abbreviations as well as those for designers, ship-builders, and facility operators, are given in the table on page 12.

Startup dates refer to the year of first criticality. Estimated startup dates based on the best available information are included for projects not yet in service. The dates for non-DOE projects are estimates announced by the sponsoring organizations. Years of initial commercial operation for power reactors are given in the tabulation on pages 6 to 11.

Reactors are listed as being *operable* under the following circumstances:

1. Federal Government reactors [other than those of the Tennessee Valley Authority which are licensed by the Nuclear Regulatory Commission (NRC) and are treated in accordance with item 2]—when criticality is achieved.
2. Non-Federal Government reactors in the United States—an operating license is issued by the NRC.
3. Reactors for foreign locations—when criticality is achieved.

Reactors are listed as *being built* under the following circumstances:

1. Federal Government reactors (other than those of the Tennessee Valley Authority which are licensed by NRC and are treated in accordance with item 2)—when ground is broken, components are ordered, or construction contract is awarded.
2. Non-Federal Government reactors in the United States—when a construction permit or limited work authorization is issued by NRC.
3. Reactors for foreign locations—when an application for an export license is received by NRC or when reliable information is received relating to the fabrication of reactor components.

Reactors are listed as being *planned* under the following circumstances:

1. Federal Government reactors—when publicly announced as a project planned for construction by the agency involved or the project is otherwise appropriately authorized.
2. Non-Federal Government reactors in the United States—when a public announcement that includes the principal vendor supplier is made by the sponsoring organization or an application for a construction permit is received by NRC.
3. Reactors for foreign locations—when public announcement that includes principal contractor and reactor type is made or when NRC receives information that a U. S. reactor manufacturer is proceeding with preconstruction design and development on the basis of a letter of intent.

Reactors are listed as *shut down* or *dismantled* when the owner announces or verifies a decision to permanently shut down a facility and does not intend to restart the reactor. A reactor shut down owing to technical problems, extensive modifications, or refueling continues to be listed as *operable*.

The statistical summary on the following page summarizes the number of reactors in every category except critical facilities. Shutdown and dismantled reactors in these categories are included since such facilities have made significant contributions to reactor technology.

STATISTICAL SUMMARY

	Operable	Being built	Planned	Shut down or dismantled
I. CIVILIAN REACTORS				
1. Power Reactors				
A. Central-Station Electric Power	76	75	12	9
B. Dual-Purpose Plants	1	2		
C. Propulsion (Maritime)				1
2. Experimental Power-Reactor Systems				
A. Electric-Power Systems	1			23
B. Auxiliary Power (SNAP)				9
C. Space Propulsion (Rover)				21
3. Test, Research, and University Reactors				
A. General Irradiation Test	2	1		4
B. High-Power Research and Test	7			6
C. Safety-Research and Test	3			9
D. General Research	23	1		45
E. University Research and Teaching	51	1		12
II. PRODUCTION REACTORS				
1. Materials Production	3			10
2. Process Development	1			4
III. MILITARY REACTORS				
1. Defense Power-Reactor Applications				
A. Remote Installations				6
B. Propulsion (Naval)	134	29		8
2. Developmental Power				
A. Electric-Power Experiments and Prototypes				3
B. Propulsion Experiments and Prototypes	8			7
3. Test and Research				
A. Test				3
B. Research	4			5
IV. REACTORS FOR EXPORT				
1. Power Reactors				
A. Central-Station Electric Power	33	30	12	1
B. Propulsion	1			
2. Test, Research, and Teaching				
A. General Irradiation Test	7	3		
B. General Research	27	4		5
C. University Research and Teaching	26			2

Abstract

This semiannual compilation provides current information about facilities for domestic use or export which are capable of sustaining a nuclear chain reaction. Civilian, production, and military reactors are listed, as are reactors for export and critical assembly facilities. Information given includes location, owner, principal nuclear contractor, type, power rating, docket number, and start-up and shutdown dates. *Nuclear Reactors Built, Being Built, or Planned* is also available on standing order (PB82-903000) through a deposit account with the National Technical Information Service, Springfield, Va. 22161.

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- 6 Map of the U. S. Commercial Nuclear Power Reactors in Operation and a Listing of These Facilities by State
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Production Reactors

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 - 31 Test Reactors
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 - 34 Propulsion
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 - 34 General Irradiation Test
 - 34 General Research
- 35 University Research and Teaching

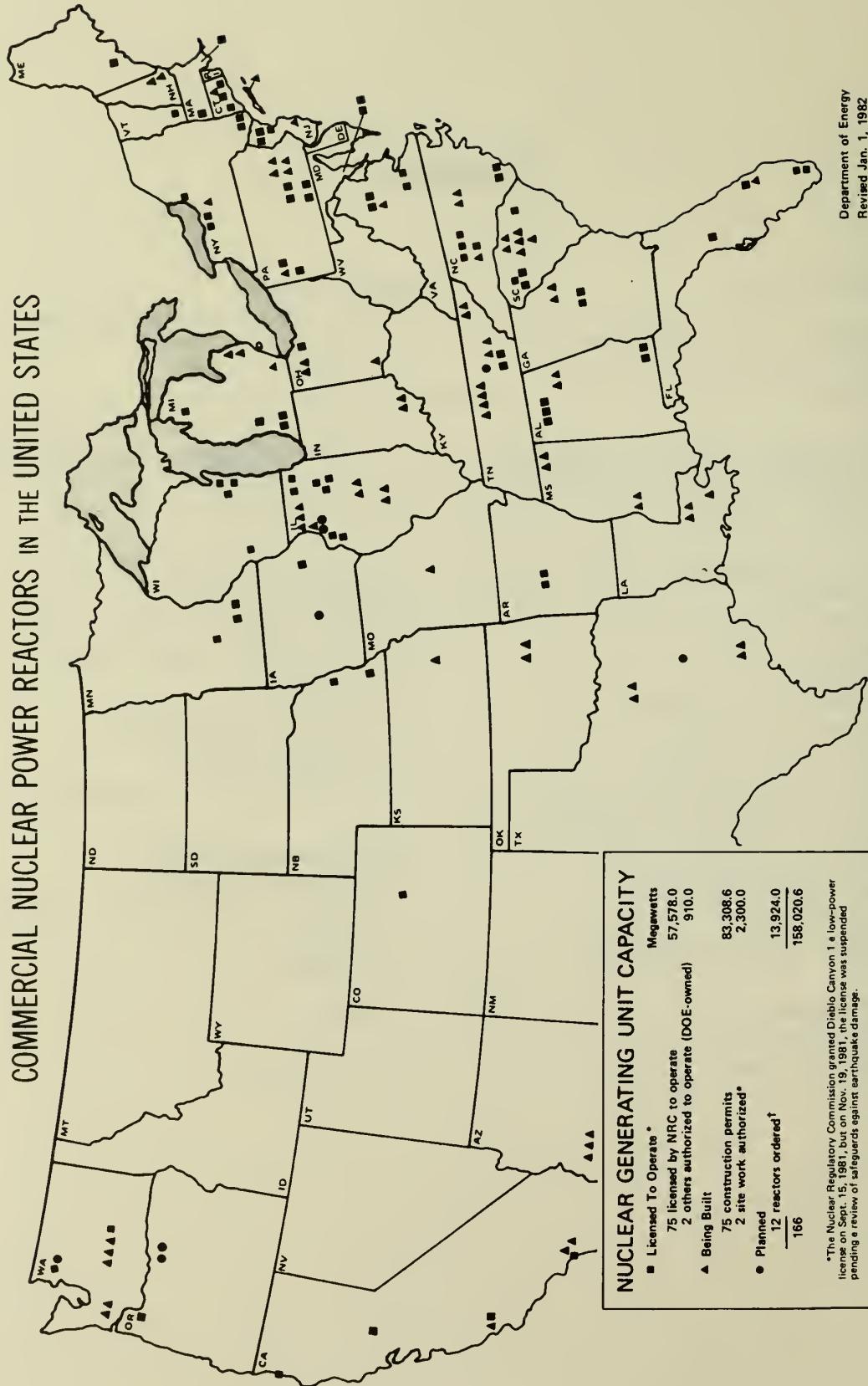
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COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES



NUCLEAR GENERATING UNIT CAPACITY

■ Licensed To Operate*

75 licensed by NRC to operate
2 others authorized to operate (DOE-owned)

▲ Being Built

75 construction permits
2 site work authorized*

● Planned

12 reactors ordered†

166

Megawatts	57,578.0
	910.0
	<hr/>
	83,308.6
	2,300.0
	<hr/>
	13,924.0
	<hr/>
	158,020.6

*The Nuclear Regulatory Commission granted Diablo Canyon 1 a low-power license on Sept. 15, 1981, but on Nov. 19, 1981, the license was suspended pending a review of safeguards against earthquake damage.

There are no symbols for units planned but not sited.
Because of space limitations, symbols do not reflect precise locations.

Department of Energy
Revised Jan. 1, 1982

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES

SITE	PLANT NAME	CAPACITY NET MW(e)	UTILITY	COMMERCIAL OPERATION
ALABAMA				
Decatur	Browns Ferry Nuclear Power Station, Unit 1	1065	Tennessee Valley Authority	1974
Decatur	Browns Ferry Nuclear Power Station, Unit 2	1065	Tennessee Valley Authority	1975
Decatur	Browns Ferry Nuclear Power Station, Unit 3	1065	Tennessee Valley Authority	1977
Dothan	Joseph M. Farley Nuclear Plant, Unit 1	829	Alabama Power Co.	1977
Dothan	Joseph M. Farley Nuclear Plant, Unit 2	820	Alabama Power Co.	1981
Scottsboro	Bellefonte Nuclear Plant, Unit 1	1213	Tennessee Valley Authority	1985
Scottsboro	Bellefonte Nuclear Plant, Unit 2	1213	Tennessee Valley Authority	1986
ARIZONA				
Wintersburg	Palo Verde Nuclear Generating Station, Unit 1	1270	Arizona Public Service Co.	1983
Wintersburg	Palo Verde Nuclear Generating Station, Unit 2	1270	Arizona Public Service Co.	1984
Wintersburg	Palo Verde Nuclear Generating Station, Unit 3	1270	Arizona Public Service Co.	1986
ARKANSAS				
Russellville	Arkansas Nuclear One, Unit 1	850	Arkansas Power & Light Co.	1974
Russellville	Arkansas Nuclear One, Unit 2	912	Arkansas Power & Light Co.	1980
CALIFORNIA				
Eureka	Humboldt Bay Power Plant, Unit 3	65	Pacific Gas & Electric Co.	1963
San Clemente	San Onofre Nuclear Generating Station, Unit 1	436	Southern California Edison Co. and San Diego Gas & Electric Co.	1968
San Clemente	San Onofre Nuclear Generating Station, Unit 2	1100	Southern California Edison Co. and San Diego Gas & Electric Co.	1982
San Clemente	San Onofre Nuclear Generating Station, Unit 3	1100	Southern California Edison Co. and San Diego Gas & Electric Co.	1983
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 1	1084	Pacific Gas & Electric Co.	1982
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 2	1106	Pacific Gas & Electric Co.	1982
Clay Station	Rancho Seco Nuclear Generating Station	918	Sacramento Municipal Utility District	1975
COLORADO				
Platteville	Ft. St. Vrain Nuclear Generating Station	330	Public Service Co. of Colorado	1978
CONNECTICUT				
Haddam Neck	Haddam Neck Plant	580	Connecticut Yankee Atomic Power Co.	1968
Waterford	Millstone Nuclear Power Station, Unit 1	660	Northeast Nuclear Energy Co.	1971
Waterford	Millstone Nuclear Power Station, Unit 2	870	Northeast Nuclear Energy Co.	1975
Waterford	Millstone Nuclear Power Station, Unit 3	1156	Northeast Nuclear Energy Co.	1986
FLORIDA				
Florida City	Turkey Point Plant, Unit 3	693	Florida Power & Light Co.	1972
Florida City	Turkey Point Plant, Unit 4	693	Florida Power & Light Co.	1973
Red Level	Crystal River Nuclear Plant, Unit 3	825	Florida Power Corp.	1977
Ft. Pierce	St. Lucie Plant, Unit 1	802	Florida Power & Light Co.	1976
Ft. Pierce	St. Lucie Plant, Unit 2	810	Florida Power & Light Co.	1983
GEORGIA				
Baxley	Edwin 1. Hatch Nuclear Plant, Unit 1	777	Georgia Power Co.	1975
Baxley	Edwin 1. Hatch Nuclear Plant, Unit 2	784	Georgia Power Co.	1978
Waynesboro	Alvin W. Vogtle, Jr., Nuclear Plant, Unit 1	1110	Georgia Power Co.	1987
Waynesboro	Alvin W. Vogtle, Jr., Nuclear Plant, Unit 2	1110	Georgia Power Co.	1988
ILLINOIS				
Morris	Dresden Nuclear Power Station, Unit 1	200	Commonwealth Edison Co.	1960
Morris	Dresden Nuclear Power Station, Unit 2	794	Commonwealth Edison Co.	1970
Morris	Dresden Nuclear Power Station, Unit 3	794	Commonwealth Edison Co.	1971
Zion	Zion Nuclear Plant, Unit 1	1040	Commonwealth Edison Co.	1973
Zion	Zion Nuclear Plant, Unit 2	1040	Commonwealth Edison Co.	1974

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY NET MW(e)	UTILITY	COMMERCIAL OPERATION
ILLINOIS (Continued)				
Cordova	Quad-Cities Station, Unit 1	789	Commonwealth Edison Co. and Iowa-Illinois Gas and Electric Co.	1973
Cordova	Quad-Cities Station, Unit 2	789	Commonwealth Edison Co. and Iowa-Illinois Gas and Electric Co.	1973
Seneca	LaSalle County Station, Unit 1	1078	Commonwealth Edison Co.	1982
Seneca	LaSalle County Station, Unit 2	1078	Commonwealth Edison Co.	1983
Byron	Byron Station, Unit 1	1120	Commonwealth Edison Co.	1984
Byron	Byron Station, Unit 2	1120	Commonwealth Edison Co.	1985
Braidwood	Braidwood Station, Unit 1	1120	Commonwealth Edison Co.	1985
Braidwood	Braidwood Station, Unit 2	1120	Commonwealth Edison Co.	1986
Clinton	Clinton Power Station, Unit 1	933.4	Illinois Power Co.	1983
Clinton	Clinton Power Station, Unit 2	933.4	Illinois Power Co.	1988
Savanna	Carroll County Station, Unit 1	1120	Commonwealth Edison Co.	Indef.
Savanna	Carroll County Station, Unit 2	1120	Commonwealth Edison Co.	Indef.
INDIANA				
Madison	Marble Hill Nuclear Generating Station, Unit 1	1130	Public Service Co. of Indiana	1986
Madison	Marble Hill Nuclear Generating Station, Unit 2	1130	Public Service Co. of Indiana	1987
IOWA				
Palo	Duane Arnold Energy Center, Unit 1	538	Iowa Electric Light & Power Co.	1975
Vandalia	Vandalia Nuclear Project	1270	Iowa Power and Light Co.	Indef.
KANSAS				
Burlington	Wolf Creek Generating Station, Unit 1	1150	Kansas Gas & Electric Co. and Kansas City Power & Light Co.	1984
LOUISIANA				
Taft	Waterford Generating Station, Unit 3	1113	Louisiana Power & Light Co.	1983
St. Francisville	River Bend Station, Unit 1	934	Gulf States Utilities Co.	1985
St. Francisville	River Bend Station, Unit 2	934	Gulf States Utilities Co.	Indef.
MAINE				
Wiscasset	Maine Yankee Atomic Power Plant	825	Maine Yankee Atomic Power Co.	1972
MARYLAND				
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 1	845	Baltimore Gas and Electric Co.	1975
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 2	845	Baltimore Gas and Electric Co.	1977
MASSACHUSETTS				
Rowe	Yankee Nuclear Power Station	175	Yankee Atomic Electric Co.	1961
Plymouth	Pilgrim Nuclear Power Station, Unit 1	655	Boston Edison Co.	1972
MICHIGAN				
Big Rock Point	Big Rock Point Nuclear Plant	72	Consumers Power Co.	1963
South Haven	Palisades Nuclear Plant	805	Consumers Power Co.	1971
Newport	Enrico Fermi Atomic Power Plant, Unit 2	1093	Detroit Edison Co.	1983
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 1	1054	Indiana & Michigan Electric Co.	1975
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 2	1100	Indiana & Michigan Electric Co.	1978
Midland	Midland Plant, Unit 1	460	Consumers Power Co.	1985
Midland	Midland Plant, Unit 2	811	Consumers Power Co.	1984
MINNESOTA				
Monticello	Monticello Nuclear Generating Plant	545	Northern States Power Co.	1971
Red Wing	Prairie Island Nuclear Generating Plant, Unit 1	530	Northern States Power Co.	1973
Red Wing	Prairie Island Nuclear Generating Plant, Unit 2	530	Northern States Power Co.	1974

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY NET MW(e)	UTILITY	COMMERCIAL OPERATION
MISSISSIPPI				
Corinth	Yellow Creek Nuclear Plant, Unit 1	1285	Tennessee Valley Authority	1990
Corinth	Yellow Creek Nuclear Plant, Unit 2	1285	Tennessee Valley Authority	Indef.
Port Gibson	Grand Gulf Nuclear Station, Unit 1	1250	Mississippi Power & Light Co.	1982
Port Gibson	Grand Gulf Nuclear Station, Unit 2	1250	Mississippi Power & Light Co.	1986
MISSOURI				
Fulton	Callaway Plant, Unit 1	1120	Union Electric Co.	1984
NEBRASKA				
Fort Calhoun	Ft. Calhoun Station, Unit 1	478	Omaha Public Power District	1973
Brownville	Cooper Nuclear Station	778	Nebraska Public Power District and Iowa Power and Light Co.	1974
NEW HAMPSHIRE				
Seabrook	Seabrook Nuclear Station, Unit 1	1200	Public Service Co. of New Hampshire	1984
Seabrook	Seabrook Nuclear Station, Unit 2	1200	Public Service Co. of New Hampshire	1986
NEW JERSEY				
Toms River	Oyster Creek Nuclear Power Plant, Unit 1	650	Jersey Central Power & Light Co.	1969
Salem	Salem Nuclear Generating Station, Unit 1	1090	Public Service Electric and Gas, N.J.	1977
Salem	Salem Nuclear Generating Station, Unit 2	1115	Public Service Electric and Gas, N.J.	1981
Salem	Hope Creek Nuclear Generating Station, Unit 1	1067	Public Service Electric and Gas, N.J.	1986
NEW YORK				
Buchanan	Indian Point Station, Unit 2	873	Consolidated Edison Co. of New York, Inc.	1973
Buchanan	Indian Point Station, Unit 3	965	Power Authority of the State of New York	1976
Scriba	Nine Mile Point Nuclear Station, Unit 1	620	Niagara Mohawk Power Corp.	1969
Scriba	Nine Mile Point Nuclear Station, Unit 2	1099.8	Niagara Mohawk Power Corp.	1986
Ontario	Robert Emmett Ginna Nuclear Power Plant, Unit 1	470	Rochester Gas & Electric Corp.	1970
Brookhaven	Shoreham Nuclear Power Station	819	Long Island Lighting Co.	1983
Scriba	James A. FitzPatrick Nuclear Power Plant	821	Power Authority of the State of New York	1975
NORTH CAROLINA				
Southport	Brunswick Steam Electric Plant, Unit 1	821	Carolina Power and Light Co.	1977
Southport	Brunswick Steam Electric Plant, Unit 2	821	Carolina Power and Light Co.	1975
Cowans Ford Dam	Wm. B. McGuire Nuclear Station, Unit 1	1180	Duke Power Co.	1981
Cowans Ford Dam	Wm. B. McGuire Nuclear Station, Unit 2	1180	Duke Power Co.	1983
Bonsal	Shearon Harris Nuclear Power Plant, Unit 1	900	Carolina Power and Light Co.	1985
Bonsal	Shearon Harris Nuclear Power Plant, Unit 2	900	Carolina Power and Light Co.	1989
Davie County	* Thomas L. Perkins Nuclear Station, Unit 1	1280	Duke Power Co.	Indef.
Davie County	* Thomas L. Perkins Nuclear Station, Unit 2	1280	Duke Power Co.	Indef.
Davie County	* Thomas L. Perkins Nuclear Station, Unit 3	1280	Duke Power Co.	Indef.
OHIO				
Oak Harbor	Davis-Besse Nuclear Power Station, Unit 1	906	Toledo Edison Co. and Cleve- land Illuminating Co.	1977
Perry	Perry Nuclear Power Plant, Unit 1	1205	Cleveland Electric Illuminating Co.	1984

*Project terminated 2-23-82.

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY NET MW(e)	UTILITY	COMMERCIAL OPERATION
OHIO (Continued)				
Perry	Perry Nuclear Power Plant, Unit 2	1205	Cleveland Electric Illuminating Co.	1988
Moscow	Wm. H. Zimmer Nuclear Power Station, Unit 1	810	Cincinnati Gas & Electric Co.	1982
OKLAHOMA				
Inola	*Black Fox Station, Unit 1	1150	Public Service Co. of Oklahoma	1985
Inola	*Black Fox Station, Unit 2	1150	Public Service Co. of Oklahoma	1988
OREGON				
Prescott	Trojan Nuclear Plant, Unit 1	1130	Portland General Electric Co.	1976
Arlington	Pebble Springs Nuclear Plant, Unit 1	1260	Portland General Electric Co.	1991
Arlington	Pebble Springs Nuclear Plant, Unit 2	1260	Portland General Electric Co.	1993
PENNSYLVANIA				
Peach Bottom	Peach Bottom Atomic Power Station, Unit 2	1065	Philadelphia Electric Co.	1974
Peach Bottom	Peach Bottom Atomic Power Station, Unit 3	1065	Philadelphia Electric Co.	1974
Pottstown	Limerick Generating Station, Unit 1	1055	Philadelphia Electric Co.	1985
Pottstown	Limerick Generating Station, Unit 2	1055	Philadelphia Electric Co.	1987
Shippingport	Shippingport Atomic Power Station ²	60	Dequesne Light Co. ²	1957
Shippingport	Beaver Valley Power Station, Unit 1	852	Duquesne Light Co. and Ohio Edison Co.	1976
Shippingport	Beaver Valley Power Station, Unit 2	833	Duquesne Light Co. and Ohio Edison Co.	1986
Middletown	Three Mile Island Nuclear Station, Unit 1	819	Metropolitan Edison Co.	1974
Middletown	Three Mile Island Nuclear Station, Unit 2	906	Jersey Central Power & Light Co.	1979
Berwick	Susquehanna Steam Electric Station, Unit 1	1050	Pennsylvania Power and Light Co.	1983
Berwick	Susquehanna Steam Electric Station, Unit 2	1050	Pennsylvania Power and Light Co.	1984
SOUTH CAROLINA				
Hartsville	H.B. Robinson Plant, Unit 2	700	Carolina Power and Light Co.	1971
Seneca	Oconee Nuclear Plant, Unit 1	887	Duke Power Co.	1973
Seneca	Oconee Nuclear Plant, Unit 2	887	Duke Power Co.	1974
Seneca	Oconee Nuclear Plant, Unit 3	887	Duke Power Co.	1974
Jenkinsville	Virgil C. Summer Nuclear Station, Unit 1	900	South Carolina Electric and Gas Co.	1982
Lake Wylie	Catawba Nuclear Station, Unit 1	1145	Duke Power Co.	1984
Lake Wylie	Catawba Nuclear Station, Unit 2	1145	Duke Power Co.	1985
Cherokee County	Cherokee Nuclear Station, Unit 1	1280	Duke Power Co.	Indef.
Cherokee County	Cherokee Nuclear Station, Unit 2	1280	Duke Power Co.	Indef.
Cherokee County	Cherokee Nuclear Station, Unit 3	1280	Duke Power Co.	Indef.
TENNESSEE				
Daisy	Sequoyah Nuclear Plant, Unit 1	1148	Tennessee Valley Authority	1981
Daisy	Sequoyah Nuclear Plant, Unit 2	1148	Tennessee Valley Authority	1982
Spring City	Watts Bar Nuclear Plant, Unit 1	1177	Tennessee Valley Authority	1984
Spring City	Watts Bar Nuclear Plant, Unit 2	1177	Tennessee Valley Authority	1985
Oak Ridge	Clinch River Breeder Reactor Plant	350	Department of Energy	Indef.
Hartsville	Hartsville Nuclear Plant, Unit 1	1233	Tennessee Valley Authority	1991
Hartsville	Hartsville Nuclear Plant, Unit 2	1233	Tennessee Valley Authority	1992
Hartsville	Hartsville Nuclear Plant, Unit 3	1233	Tennessee Valley Authority	Indef.
Hartsville	Hartsville Nuclear Plant, Unit 4	1233	Tennessee Valley Authority	Indef.
Kingsport	Phipps Bend Nuclear Plant, Unit 1	1233	Tennessee Valley Authority	1994
Kingsport	Phipps Bend Nuclear Plant, Unit 2	1233	Tennessee Valley Authority	Indef.
TEXAS				
Glen Rose	Comanche Peak Steam Electric Station, Unit 1	1111	Texas Utilities Generating Co.	1984
Glen Rose	Comanche Peak Steam Electric Station, Unit 2	1111	Texas Utilities Generating Co.	1986
Wallis	Allens Creek Nuclear Generating Station, Unit 1	1150	Houston Lighting & Power Co.	1991

*Project terminated 2-16-82.

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY NET MW(e)	UTILITY	COMMERCIAL OPERATION
TEXAS (Continued)				
Matagorda County	South Texas Project, Unit 1	1250	Central Power & Light Co. and Houston Lighting & Power Co.	1984
Matagorda County	South Texas Project, Unit 2	1250	Central Power & Light Co. and Houston Lighting & Power Co.	1986
VERMONT				
Vernon	Vermont Yankee Nuclear Power Station	514	Vermont Yankee Nuclear Power Corp.	1972
VIRGINIA				
Gravel Neck	Surry Power Station, Unit 1	788	Virginia Electric & Power Co.	1972
Gravel Neck	Surry Power Station, Unit 2	788	Virginia Electric & Power Co.	1973
Mineral	North Anna Power Station, Unit 1	907	Virginia Electric & Power Co.	1979
Mineral	North Anna Power Station, Unit 2	907	Virginia Electric & Power Co.	1980
Mineral	North Anna Power Station, Unit 3	907	Virginia Electric & Power Co.	1989
WASHINGTON				
Richland	N-Reactor/WPPSS Steam	860	Department of Energy	1966
Richland	Washington Nuclear Project No. 1	1250	Washington Public Power Supply System	1986
Richland	Washington Nuclear Project No. 2	1100	Washington Public Power Supply System	1984
Satsop	Washington Nuclear Project No. 3	1240	Washington Public Power Supply System	1986
Richland	* Washington Nuclear Project No. 4	1250	Washington Public Power Supply System	1987
Satsop	* Washington Nuclear Project No. 5	1240	Washington Public Power Supply System	1987
Sedro Woolley	Skagit Nuclear Power Project, Unit 1	1277	Puget Sound Power & Light Co.	1991
Sedro Woolley	Skagit Nuclear Power Project, Unit 2	1277	Puget Sound Power & Light Co.	1993
WISCONSIN				
La Crosse	La Crosse (Genoa) Nuclear Generating Station	50	Dairyland Power Cooperative	1969
Two Creeks	Point Beach Nuclear Plant, Unit 1	497	Wisconsin Michigan Power Co.	1970
Two Creeks	Point Beach Nuclear Plant, Unit 2	497	Wisconsin Michigan Power Co.	1972
Carlton	Kewaunee Nuclear Power Plant, Unit 1	535	Wisconsin Public Service Corp.	1974

*Project terminated 1-22-82.

**LIST OF CONTRACTORS, DESIGNERS, SHIPBUILDERS, AND FACILITY OPERATORS
FOR WHICH ABBREVIATIONS APPEAR IN TABLES**

AC	Allis-Chalmers Mfg. Co.	HA	Hittman Associates
ACF	ACF Industries, Inc. (reactor activities absorbed by AC)	HEDL	Hanford Engineering Development Laboratory
AG	Aerojet-General Corporation	HKF	H. K. Ferguson Co.
AGN	Aerojet-General Nucleonics, formerly a subsidiary and now a division of Aerojet-General Corporation	Hughes IC	Hughes Aircraft Co.
AI	Atomics International, a division of Rockwell International	INC	Interuclear Co.
Alco	Alco Products, Inc. (reactor activities absorbed by AC)	INEL	Idaho Nuclear Corporation
AMF	AMF Atomics, Inc., a division of American Machine & Foundry Co.	Ingalls	Idaho National Engineering Laboratory
ANL	Argonne National Laboratory, operated by the University of Chicago	Kaman	Ingalls Shipbuilding Corp.
ANPD	Aircraft Nuclear Propulsion Department, General Electric Company (name changed to Flight Propulsion Laboratory Department)	KAPL	Kaman Nuclear, a division of Kaman Aircraft Corp.
AS Inc.	American Standard Inc.	KE	Knolls Atomic Power Laboratory, operated by General Electric Company
AU, Inc.	Associated Universities, Inc. (Brookhaven National Laboratory)	LANL	Kaiser Engineers, a division of Henry J. Kaiser Co.
BAC	Bendix Aviation Corp.	LLNL	Los Alamos National Laboratory, operated by the University of California
Bethlehem	Shipbuilding Division, Bethlehem Steel Co. (now Quincy Division, General Dynamics Corp.)	Lockheed	Lawrence Livermore National Laboratory, operated by the University of California
Bettis	Bettis Atomic Power Laboratory, operated by Westinghouse Electric Corporation	Mare Island	Lockheed Aircraft Corp.
Blaw-Knox	Blaw-Knox Co.	Martin	Mare Island Naval Shipyard
B&R	Burns & Roe, Inc.	Maxon	Martin Marietta Corp.
CL	Babcock & Wilcox Co.	Met. Lab	Maxon Construction Co.
Comb.	Clinton Laboratory of the Manhattan Engineer District	NASA	Metallurgical Laboratory of the Manhattan Engineer District
Convair	Combustion Engineering, Inc.	NBS	National Aeronautics and Space Administration
Cook	Convair Division, General Dynamics Corp.	Newport News	National Bureau of Standards
CW	Nucleidyne Co., a division of Cook Electric Company	NRDS	Newport News Shipbuilding & Dry Dock Co.
Daystrom	Curtiss-Wright Corporation	NRL	National Research Laboratory
DOD	Daystrom, Inc.	NSA	Nuclear Systems Associates
DOE	Department of Defense	NTS	Nevada Test Site
Du Pont	E. I. Du Pont de Nemours & Company, Inc.	NYSC	New York Shipbuilding Corp.
Ebasco	Ebasco Services, Inc.	ORNL	Oak Ridge National Laboratory
EG & G-ID	EG&G Idaho, Inc. (a division of EG&G, Inc.)	PNL	Pacific Northwest Laboratory, operated by Battelle Memorial Institute
Electric Boat	Electric Boat Division, General Dynamics Corp.	Portsmouth	Portsmouth Naval Shipyard
Fluor	The Fluor Corporation, Ltd.	PPC	Phillips Petroleum Co.
Fram.	Foster Wheeler Corp.	PRDC	Power Reactor Development Company
FW	General Atomic, a Gulf and Royal Dutch/Shell Company	P&W	Pratt & Whitney Aircraft Division, United Aircraft Corp.
GA	Quincy Division, General Dynamics Corp.	R1	Rockwell International
GD (Quincy)	General Electric Company	Sandia	Sandia National Laboratories, operated by Sandia Corp., a subsidiary of Western Electric Co.
GE	General Electric Nuclear Materials and Propulsion Operation	San Francisco Bay	San Francisco Bay Naval Shipyard
GENMPO	General Motors Corp.	TVA	Tennessee Valley Authority
GM	General Nuclear Engineering Corp. (became a division of Combustion Engineering, Inc., in 1964)	UNC	United Nuclear Corporation, Development Division
GNEC	General Services Administration	UNCNI	UNC Nuclear Industries
GSA		West.	Westinghouse Electric Corporation

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power

(Docket numbers for commercial nuclear power plants are listed in brackets in the text.)

Name and/or owner	Location	Principal nuclear contractor	Type	Unit size, net MW(e)	Power ¹	Reactor, MW(t)	Start-up	Shutdown
OPERABLE								
Arkansas Nuclear One, Unit 1 (Arkansas Power & Light Co.) [50-313] ³	Russellville, Ark.	B&W	Pressurized water	850	2568	1974		
Arkansas Nuclear One, Unit 2 (Arkansas Power & Light Co.) [50-368] ³	Russellville, Ark.	Comb.	Pressurized water	912	2815	1978		
Beaver Valley Power Station, Unit 1 (Duquesne Light Co., Ohio Edison Co., and Pennsylvania Power Co.) [50-334] ³	Shippingport, Pa.	West.	Pressurized water	852	2660	1976		
Big Rock Point Nuclear Plant (Consumers Power Co.) [50-155] ^{3,4}	Big Rock Point, Mich.	GE	Boiling water	72	240	1962		
Browns Ferry Nuclear Power Station, Unit 1 (Tennessee Valley Authority) [50-259] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1973		
Browns Ferry Nuclear Power Station, Unit 2 (Tennessee Valley Authority) [50-260] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1974		
Browns Ferry Nuclear Power Station, Unit 3 (Tennessee Valley Authority) [50-296] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1976		
Brunswick Steam Electric Plant, Unit 1 (Carolina Power & Light Co.) [50-324] ³	Southport, N. C.	GE	Boiling water	821	2436	1976		
Brunswick Steam Electric Plant, Unit 2 (Carolina Power & Light Co.) [50-325] ³	Southport, N. C.	GE	Boiling water	821	2436	1975		
Calvert Cliffs Nuclear Power Plant, Unit 1 (Baltimore Gas & Electric Co.) [50-317] ³	Lusby, Md.	Comb.	Pressurized water	845	2700	1974		
Calvert Cliffs Nuclear Power Plant, Unit 2 (Baltimore Gas & Electric Co.) [50-318] ³	Lusby, Md.	Comb.	Pressurized water	845	2700	1976		
Cooper Nuclear Station (Nebraska Public Power District and Iowa Power and Light Co.) [50-298] ³	Brownville, Nebr.	GE	Boiling water	778	2381	1974		
Crystal River Nuclear Plant, Unit 3 (Florida Power Corp.) [50-302] ³	Red Level, Fla.	B&W	Pressurized water	825	2544	1977		
Davis-Besse Nuclear Power Station, Unit 1 (Toledo Edison Co. and Cleveland Electric Illuminating Co.) [50-346] ³	Oak Harbor, Ohio	B&W	Pressurized water	906	2772	1977		
Donald C. Cook Nuclear Power Plant, Unit 1 (Indiana and Michigan Electric Co.) [50-315] ³	Bridgeman, Mich.	West.	Pressurized water	1054	3250	1975		
Donald C. Cook Nuclear Power Plant, Unit 2 (Indiana and Michigan Electric Co.) [50-316] ³	Bridgeman, Mich.	West.	Pressurized water	1100	3391	1978		
*Dresden Nuclear Power Station, Unit 1 (Commonwealth Edison Co.) [50-010] ³	Morris, Ill.	GE	Boiling water	200	700	1959		
Dresden Nuclear Power Station, Unit 2 (Commonwealth Edison Co.) [50-237] ³	Morris, Ill.	GE	Boiling water	794	2527	1970		
Dresden Nuclear Power Station, Unit 3 (Commonwealth Edison Co.) [50-249] ³	Morris, Ill.	GE	Boiling water	794	2527	1971		
Duane Arnold Energy Center, Unit 1 (Iowa Electric Light & Power Co., Central Iowa Power Cooperative, and Corn Belt Power Cooperative) [50-331] ³	Palo, Iowa	GE	Boiling water	538	1658	1974		
Edwin I. Hatch Nuclear Plant, Unit 1 (Georgia Power Co.) [50-321] ³	Baxley, Ga.	GE	Boiling water	777	2436	1974		
Edwin I. Hatch Nuclear Plant, Unit 2 (Georgia Power Co.) [50-366] ³	Baxley, Ga.	GE	Boiling water	784	2436	1978		
Fort Calhoun Station, Unit 1 (Omaha Public Power District) [50-285] ³	Fort Calhoun, Nebr.	Comb.	Pressurized water	478	1500	1973		
Fort St. Vrain Nuclear Generating Station (Public Service Co. of Colorado) [50-267] ^{3,4}	Platteville, Colo.	GA	High temperature	330	842	1974		
Haddam Neck Plant (Connecticut Yankee Atomic Power Co.) [50-213] ^{3,4}	Haddam Neck, Conn.	West.	Pressurized water	580	1825	1967		
H. B. Robinson Plant, Unit 2 (Carolina Power & Light Co.) [50-261] ³	Hartsville, S. C.	West.	Pressurized water	700	2300	1970		
*Humboldt Bay Power Plant, Unit 3 (Pacific Gas & Electric Co.) [50-133] ³	Eureka, Calif.	GE	Boiling water	65	242	1963		
Indian Point Station, Unit 2 (Consolidated Edison Co. of New York, Inc.) [50-247] ³	Buchanan, N. Y.	West.	Pressurized water	873	2758	1973		
Indian Point Station, Unit 3 (Power Authority of New York) [50-286] ³	Buchanan, N. Y.	West.	Pressurized water	965	3025	1976		
James A. FitzPatrick Nuclear Power Plant (Power Authority of the State of New York) [50-333] ³	Scriba, N. Y.	GE	Boiling water	821	2436	1974		

*Shut down for upgrading of emergency core-cooling system and for chemical cleaning. Outage expected to last through mid-1986.

[†]Shut down pending decision on future operation.

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Unit size, net MW(t)	Reactor, MW(t)	Start-up	Shut-down	Power ¹
OPERABLE (Continued)								
Joseph M. Farley Nuclear Plant, Unit 1 (Alabama Power Co.) [50-348] ³	Dothan, Ala.	West.	Pressurized water	829	2652	1977		
Joseph M. Farley Nuclear Plant, Unit 2 (Alabama Power Co.) [50-364] ³	Dothan, Ala.	West.	Pressurized water	829	2652	1981		
Keweenaw Nuclear Power Plant (Wisconsin Power & Light Co., Wisconsin Public Service Co., and Madison Gas & Electric Co.) [50-305] ³	Carlton, Wis.	West.	Pressurized water	535	1650	1974		
La Crosse (Genoa) Nuclear Generating Station (Dairyland Power Cooperative) [50-409] ^{3,4}	La Crosse, Wis.	AC	Boiling water	50	165	1967		
Maine Yankee Atomic Power Plant (Maine Yankee Atomic Power Co.) [50-309] ³	Wiscasset, Maine	Comb. GE	Pressurized water Boiling water	825	2630	1972		
Millstone Nuclear Power Station, Unit 1 (Northeast Nuclear Energy Co.) [50-245] ³	Waterford, Conn.	Comb. GE	Pressurized water	660	2011	1970		
Millstone Nuclear Power Station, Unit 2 (Northeast Nuclear Energy Co.) [50-336] ³	Waterford, Conn.	Comb. GE	Boiling water	870	2700	1975		
Monticello Nuclear Generating Plant (Northern States Power Co.) [50-263] ³	Monticello, Minn.	GE	Boiling water	545	1670	1970		
Nine Mile Point Nuclear Station, Unit 1 (Niagara Mohawk Power Corp.) [50-220] ³	Scriba, N. Y.	GE	Boiling water	620	1850	1969		
North Anna Power Station, Unit 1 (Virginia Electric & Power Co.) [50-338] ³	Mineral, Va.	West.	Pressurized water	907	2775	1978		
North Anna Power Station, Unit 2 (Virginia Electric & Power Co.) [50-339] ³	Mineral, Va.	West.	Pressurized water	907	2775	1980		
Oconee Nuclear Station, Unit 1 (Duke Power Co.) [50-269] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1973		
Oconee Nuclear Station, Unit 2 (Duke Power Co.) [50-270] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1973		
Oconee Nuclear Station, Unit 3 (Duke Power Co.) [50-287] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1974		
Oyster Creek Nuclear Power Plant, Unit 1 (Jersey Central Power & Light Co.) [50-219] ³	Toms River, N. J.	GE	Boiling water	650	1930	1969		
Palisades Nuclear Plant, Unit 1 (Consumers Power Co. of Michigan) [50-255] ³	South Haven, Mich.	Comb. Ge	Pressurized water Boiling water	805	2530	1971		
Peach Bottom Atomic Power Station, Unit 2 (Philadelphia Electric Co., Public Service Electric & Gas Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-277] ³	Peach Bottom, Pa.	Ge	Boiling water	1065	3293	1973		
Peach Bottom Atomic Power Station, Unit 3 (Philadelphia Electric Co., Public Service Electric & Gas Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-278] ³	Peach Bottom, Pa.	GE	Boiling water	1065	3293	1974		
Pilgrim Nuclear Power Station, Unit 1 (Boston Edison Co.) [50-293] ³	Plymouth, Mass.	GE	Boiling water	655	1998	1972		
Point Beach Nuclear Plant, Unit 1 (Wisconsin Electric Power Co. and Wisconsin Michigan Power Co.) [50-266] ³	Two Creeks, Wis.	West.	Pressurized water	497	1518	1970		
Point Beach Nuclear Plant, Unit 2 (Wisconsin Electric Power Co. and Wisconsin Michigan Power Co.) [50-301] ³	Two Creeks, Wis.	West.	Pressurized water	497	1518	1972		
Prairie Island Nuclear Generating Plant, Unit 1 (Northern States Power Co.) [50-282] ³	Red Wing, Minn.	West.	Pressurized water	530	1650	1973		
Prairie Island Nuclear Generating Plant, Unit 2 (Northern States Power Co.) [50-306] ³	Red Wing, Minn.	West.	Pressurized water	530	1650	1974		
Quad-Cities Station, Unit 1 (Commonwealth Edison Co. and Iowa-Illinois Gas & Electric Co.) [50-254] ³	Cordova, Ill.	GE	Boiling water	789	2511	1972		
Quad-Cities Station, Unit 2 (Commonwealth Edison Co. and Iowa-Illinois Gas & Electric Co.) [50-265] ³	Cordova, Ill.	GE	Boiling water	789	2511	1972		
Rancho Seco Nuclear Generating Station, Unit 1 (Sacramento Municipal Utility District) [50-312] ³	Clay Station, Calif.	B&W	Pressurized water	918	2772	1974		
Robert Emmett Ginna Nuclear Power Plant, Unit 1 (Rochester Gas & Electric Co.) [50-244] ³	Ontario, N. Y.	West.	Pressurized water	470	1520	1969		

Salem Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co., Philadelphia Electric Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-272] ³	Salem, N. J.	West.	Pressurized water	1090	3338	1976
Salem Nuclear Generating Station, Unit 2 (Public Service Electric & Gas Co., Philadelphia Electric Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-311] ³	Salem, N. J.	West.	Pressurized water	1115	3411	1980
San Onofre Nuclear Generating Station, Unit 1 (Southern California Edison and San Diego Gas & Electric Co.) [50-206] ^{3,4}	San Clemente, Calif.	West.	Pressurized water	436	1347	1967
Sequoyah Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-327] ³	Daisy, Tenn.	West.	Pressurized water	1148	3411	1980
Sequoyah Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-328] ³	Daisy, Tenn.	West.	Pressurized water	1148	3411	1981
Shippingport Atomic Power Station (DOE and Duquesne Light Co.) ²	Shippingport, Pa.	West.	Pressurized water	60	236	1957
St. Lucie Plant, Unit 1 (Florida Power & Light Co.) [50-335] ³	Fort Pierce, Fla.	Comb.	Pressurized water	788	2700	1976
Surry Power Station, Unit 1 (Virginia Electric & Power Co.) [50-280] ³	Gravel Neck, Va.	West.	Pressurized water	788	2441	1972
Surry Power Station, Unit 2 (Virginia Electric & Power Co.) [50-281] ³	Gravel Neck, Va.	West.	Pressurized water	822	2441	1973
Three Mile Island Nuclear Station, Unit 1 (Metropolitan Edison Co.) [50-289] ³	Middletown, Pa.	B&W	Pressurized water	819	2535	1974
*Three Mile Island Nuclear Station, Unit 2 (Metropolitan Edison Co.) [50-320] ³	Middletown, Pa.	B&W	Pressurized water	906	2772	1979
Trojan Nuclear Plant, Unit 1 (Portland General Electric Co., Eugene Water & Electric Board, and Pacific Power & Light Co.) [50-344] ³	Prescott, Oreg.	West.	Pressurized water	1130	3411	1975
Turkey Point Plant, Unit 3 (Florida Power & Light Co.) [50-250] ³	Florida City, Fla.	West.	Pressurized water	693	2200	1972
Turkey Point Plant, Unit 4 (Florida Power & Light Co.) [50-251] ³	Florida City, Fla.	West.	Pressurized water	693	2200	1973
Vermont Yankee Nuclear Power Station (Vermont Yankee Nuclear Power Corp.) [50-271] ³	Vernon, Vt.	GE	Boiling water	514	1593	1972
William B. McGuire Nuclear Station, Unit 1 (Duke Power Co.) [50-369] ³	Cowans Ford Dam, N.C.	West.	Pressurized water	1180	3411	1981
Yankee-Rowe Nuclear Power Station (Yankee Atomic Electric Co.) [50-29] ^{3,4}	Rowe, Mass.	West.	Pressurized water	175	600	1960
Zion Nuclear Plant, Unit 1 (Commonwealth Edison Co.) [50-295] ³	Zion, Ill.	West.	Pressurized water	1040	3250	1973
Zion Nuclear Plant, Unit 2 (Commonwealth Edison Co.) [50-304] ³	Zion, Ill.	West.	Pressurized water	1040	3250	1973
BEING BUILT						
Alvin W. Vogtle Nuclear Plant, Unit 1 (Georgia Power Co.) [50-424] ³	Waynesboro, Ga.	West.	Pressurized water	1110	3425	1986
Alvin W. Vogtle Nuclear Plant, Unit 2 (Georgia Power Co.) [50-425] ³	Waynesboro, Ga.	West.	Pressurized water	1110	3425	1988
Beaver Valley Power Station, Unit 2 (Duquesne Light Co., Ohio Edison Co., and Pennsylvania Power Co.) [50-412] ³	Shippingport, Pa.	West.	Pressurized water	833	2660	1986
Bellefonte Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-438] ³	Scottdsboro, Ala.	B&W	Pressurized water	1213	3621	1985
Bellefonte Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-439] ³	Scottdsboro, Ala.	B&W	Pressurized water	1213	3621	1987
†Black Fox Station, Unit 1 (Public Service of Oklahoma) [STN-50-556] ³	Inola, Okla.	GE	Boiling water	1150	3579	1985
†Black Fox Station, Unit 2 (Public Service of Oklahoma) [STN-50-557] ³	Inola, Okla.	GE	Boiling water	1150	3579	1988
Braidwood Station, Unit 1 (Commonwealth Edison Co.) [50-456] ³	Braidwood, Ill.	West.	Pressurized water	1120	3425	1985
Braidwood Station, Unit 2 (Commonwealth Edison Co.) [50-457] ³	Braidwood, Ill.	West.	Pressurized water	1120	3425	1986
Byron Station, Unit 1 (Commonwealth Edison Co.) [50-454] ³	Byron, Ill.	West.	Pressurized water	1120	3425	1984
Byron Station, Unit 2 (Commonwealth Edison Co.) [50-455] ³	Byron, Ill.	West.	Pressurized water	1120	3425	1985
Callaway Plant, Unit 1 (Union Electric Co.) [STN-50-483] ³	Fulton, Mo.	West.	Pressurized water	1120	3411	1983
Catawba Nuclear Station, Unit 1 (Duke Power Co.) [50-413] ³	Lake Wylie, S. C.	West.	Pressurized water	1145	3411	1984
Catawba Nuclear Station, Unit 2 (Duke Power Co.) [50-414] ³	Lake Wylie, S. C.	West.	Pressurized water	1145	3411	1985
Cherokee Nuclear Station, Unit 1 (Duke Power Co.) [STN-50-491] ³	Cherokee County, S. C.	Comb.	Pressurized water	1280	3800	Indef.
Cherokee Nuclear Station, Unit 2 (Duke Power Co.) [STN-50-492] ³	Cherokee County, S. C.	Comb.	Pressurized water	1280	3800	Indef.
Clinton Power Station, Unit 1 (Illinois Power Co.) [50-461] ³	Clinton, Ill.	GE	Boiling water	933.4	2894	1983
Clinton Power Station, Unit 2 (Illinois Power Co.) [50-462] ³	Clinton, Ill.	GE	Boiling water	933.4	2894	1987
Comanche Peak Steam Electric Station, Unit 1 (Texas Power & Light Co., Texas Electric Service Co., and Dallas Power and Light Co.) [50-445] ³	Glen Rose, Tex.	West.	Pressurized water	1111	3411	1982

*Shutdown for cleanup and decision on future operation.

²Project terminated 2-16-82.

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Unit size, net MW(e)	Reactor, MW(t)	Start-up	Shutdown	Power ¹
BEING BUILT (Continued)								
Comanche Peak Steam Electric Station, Unit 2 (Texas Power & Light Co., Texas Electric Service Co., and Dallas Power and Light Co.) [50-446] ³	Glen Rose, Tex.	West.	Pressurized water	1111	3411	1985		
*Diablo Canyon Nuclear Power Plant, Unit 1 (Pacific Gas & Electric Co.) [50-275] ³	Diablo Canyon, Calif.	West.	Pressurized water	1084	3338	1982.		
Diablo Canyon Nuclear Power Plant, Unit 2 (Pacific Gas & Electric Co.) [50-323] ³	Diablo Canyon, Calif.	West.	Pressurized water	1106	3411	1982		
Enrico Fermi Atomic Power Plant, Unit 2 (Detroit Edison Co.) [50-341] ³	Newport, Mich.	GE	Boiling water	1093	3292	1983		
Grand Gulf Nuclear Station, Unit 1 (Mississippi Power & Light Co.) [50-416] ³	Port Gibson, Miss.	GE	Boiling water	1250	3833	1982		
Grand Gulf Nuclear Station, Unit 2 (Mississippi Power & Light Co.) [50-417] ³	Port Gibson, Miss.	GE	Boiling water	1250	3833	1985		
Hartsville Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-518] ³	Tennessee	GE	Boiling water	1233	3583	1990		
Hartsville Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-519] ³	Tennessee	GE	Boiling water	1233	3583	1991		
Hartsville Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-520] ³	Tennessee	GE	Boiling water	1233	3583	Indef.		
Hartsville Nuclear Plant, Unit 2 (Tennessee Valley Authority) [STN-50-521] ³	Tennessee	GE	Boiling water	1233	3583	Indef.		
Hope Creek Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co.) [50-354] ³	Salem, N. J.	GE	Boiling water	1067	3293	1986		
La Salle County Station, Unit 1 (Commonwealth Edison Co.) [50-373] ³	Seneca, Ill.	GE	Boiling water	1078	3293	1982		
La Salle County Station, Unit 2 (Commonwealth Edison Co.) [50-374] ³	Seneca, Ill.	GE	Boiling water	1078	3293	1983		
Limerick Generating Station, Unit 1 (Philadelphia Electric Co.) [50-352] ³	Pottstown, Pa.	GE	Boiling water	1055	3293	1985		
Limerick Generating Station, Unit 2 (Philadelphia Electric Co.) [50-353] ³	Pottstown, Pa.	GE	Boiling water	1055	3293	1987		
Marble Hill Nuclear Generating Station, Unit 1 (Public Service Co. of Indiana) [STN-50-546] ³	Marble Hill, Ind.	West.	Pressurized water	1130	3425	1986		
Marble Hill Nuclear Generating Station, Unit 2 (Public Service Co. of Indiana) [STN-50-547] ³	Madison, Ind.	West.	Pressurized water	1130	3425	1987		
Millstone Nuclear Power Station, Unit 3 (Millstone Point Co.) [50-423] ³	Waterford, Conn.	West.	Pressurized water	1156	3411	1986		
Nine Mile Point Nuclear Station, Unit 2 (Niagara Mohawk Power Corp.) [50-410] ³	Scriba, N. Y.	GE	Boiling water	1099.8	3323	1986		
North Anna Power Station, Unit 3 (Virginia Electric & Power Co.) [50-404] ³	Mineral, Va.	B&W	Pressurized water	907	2631	1989		
Palo Verde Nuclear Generating Station, Unit 1 (Arizona Public Service Co., Tucson Gas & Electric Co., Salt River Project, Public Service Co. of New Mexico, and El Paso Electric Co.) [STN-50-528] ³	Wintersburg, Ariz.	Comb.	Pressurized water	1270	3817	1982		
Palo Verde Nuclear Generating Station, Unit 2 (Arizona Public Service Co., Tucson Gas & Electric Co., Salt River Project, Public Service Co. of New Mexico, and El Paso Electric Co.) [STN-50-530] ³	Wintersburg, Ariz.	Comb.	Pressurized water	1270	3817	1983		
Perry Nuclear Power Plant, Unit 1 (Cleveland Electric Illuminating Co.) [50-440] ³	Perry, Ohio	GE	Boiling water	1205	3579	1983		
Perry Nuclear Power Plant, Unit 2 (Cleveland Electric Illuminating Co.) [50-441] ³	Perry, Ohio	GE	Boiling water	1205	3579	1987		
Phipps Bend Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-553] ³	Kingsport, Tenn.	GE	Boiling water	1233	3583	1993		
Phipps Bend Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-554] ³	Kingsport, Tenn.	GE	Boiling water	1233	3583	Indef.		
River Bend Station, Unit 1 (Gulf States Utilities Co.) [50-458] ³	St. Francisville, La.	GE	Boiling water	934	2894	1983		
River Bend Station, Unit 2 (Gulf States Utilities Co.) [50-459] ³	St. Francisville, La.	GE	Boiling water	934	2894	Indef.		
†San Onofre Nuclear Generating Station, Unit 2 (Southern California Edison Co. and San Diego Gas & Electric Co.) [50-361] ³	San Clemente, Calif.	Comb.	Pressurized water	1100	3410	1982		

San Onofre Nuclear Generating Station, Unit 3 (Southern California Edison Co. and San Diego Gas & Electric Co.) [50-362] ³	San Clemente, Calif.	Comb.	Pressurized water	1100	3410	1982
Seabrook Nuclear Station, Unit 1 (Public Service Co. of New Hampshire and United Illuminating Co.) [50-443] ³	Seabrook, N. H.	West.	Pressurized water	1200	3411	1983
Seabrook Nuclear Station, Unit 2 (Public Service Co. of New Hampshire and United Illuminating Co.) [50-444] ³	Seabrook, N. H.	West.	Pressurized water	1200	3411	1986
Shearon Harris Nuclear Power Plant, Unit 1 (Carolina Power & Light Co.) [50-400] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1984
Shearon Harris Nuclear Power Plant, Unit 2 (Carolina Power & Light Co.) [50-401] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1989
Shoreham Nuclear Power Station (Long Island Lighting Co.) [50-322] ³	Brookhaven, N. Y.	GE	Boiling water	819	2436	1982
South Texas Project, Unit 1 (Houston Lighting & Power Co., Central Power & Light Co., City Public Service Board of San Antonio, and City of Austin) [STN-50-498] ³	Bay City, Tex.	West.	Pressurized water	1250	3817	1983
South Texas Project, Unit 2 (Houston Lighting & Power Co., Central Power & Light Co., City Public Service Board of San Antonio, and City of Austin) [STN-50-499] ³	Bay City, Tex.	West.	Pressurized water	1250	3817	1985
St. Lucie Plant, Unit 2 (Florida Power & Light Co.) [50-389] ³	Fort Pierce, Fla.	Comb.	Pressurized water	810	2570	1982
[50-387] ³	Berwick, Pa.	GE	Boiling water	1050	3293	1982
Susquehanna Steam Electric Station, Unit 1 (Pennsylvania Power & Light Co.) [50-388] ³	Berwick, Pa.	GE	Boiling water	1050	3293	1984
Virgil C. Summer Nuclear Station, Unit 1 (South Carolina Electric & Gas Co.) [50-395] ³	Jenkinsville, S.C.	West.	Pressurized water	900	2785	1982
Washington Nuclear Project, Unit 1 (Washington Public Power Supply System) [50-460] ³	Richland, Wash.	B&W	Pressurized water	1250	3619	1986
Washington Nuclear Project, Unit 2 (Washington Public Power Supply System) [50-397] ³	Richland, Wash.	GE	Boiling water	1100	3323	1983
Washington Nuclear Project, Unit 3 (Washington Public Power Supply System) [STN-50-508] ³	Satsop, Wash.	Comb.	Pressurized water	1240	3817	1986
†Washington Nuclear Project, Unit 4 (Washington Public Power Supply System) [50-513] ³	Richland, Wash.	B&W	Pressurized water	1250	3619	1987
‡Washington Nuclear Project, Unit 5 (Washington Public Power Supply System) [STN-50-509] ³	Satsop, Wash.	Comb.	Pressurized water	1240	3817	1987
Waterford Generating Station, Unit 3 (Louisiana Power & Light Co.) [50-382] ³	Taft, La.	Comb.	Pressurized water	1113	3410	1982
Watts Bar Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-390] ³	Spring City, Tenn.	West.	Pressurized water	1177	3425	1983
Watts Bar Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-391] ³	Spring City, Tenn.	West.	Pressurized water	1177	3425	1984
William B. McGuire Nuclear Station, Unit 2 (Duke Power Co.) [50-370] ³	Cowans Ford Dam, N.C.	West.	Pressurized water	1180	3411	1983
William H. Zimmer Nuclear Station, Unit 1 (Cincinnati Gas & Electric Co., Columbus & Southern Ohio Electric Co., and Dayton Power & Light Co.) [50-358] ³	Moscow, Ohio	GE	Boiling water	810	2436	1982
Wolf Creek Generating Station (Kansas Gas & Electric Co. and Kansas City Power & Light Co.) [STN-50-482] ³	Burlington, Kans.	West.	Pressurized water	1150	3411	1983
Yellow Creek Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-566] ³	Corinth, Miss.	Comb.	Pressurized water	1285	3817	1990
Yellow Creek Nuclear Plant, Unit 2 (Tennessee Valley Authority) [STN-50-567] ³	Corinth, Miss.	Comb.	Pressurized water	1285	3817	Indef.
PLANNED						
Allens Creek Nuclear Generating Plant, Unit 1 (Houston Lighting & Power) [50-466] ³	Wallis, Tex.	GE	Boiling water	1200	3579	1990
Carroll County Station, Unit 1 (Commonwealth Edison Co.)	Savanna, Ill.	West.	Pressurized water	1120	Indef.	Indef.
Carroll County Station, Unit 2 (Commonwealth Edison Co.)	Savanna, Ill.	West.	Pressurized water	1120	Indef.	Indef.
Clinch River Breeder Reactor Plant (DOE) [50-537] ³	Oak Ridge, Tenn.	West.	Sodium cooled fast breeder	350	975	

* Low power operating license issued 9-22-81; suspended 11-19-81.

†Low power operating license issued 2-16-82.

‡Project terminated 1-22-82.

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Unit size, net MW(e)	Reactor, MW(t)	Start-up	Shut-down	Power ¹
PLANNED (Continued)								
Pebble Springs Nuclear Plant, Unit 1 (Portland General Electric Co.) [50-514] ³	Arlington, Oreg.	B&W	Pressurized water	1260	3600	1990		
Pebble Springs Nuclear Plant, Unit 2 (Portland General Electric Co.) [50-515] ³	Arlington, Oreg.	B&W	Pressurized water	1260	3600	1992		
Skagit Nuclear Power Project, Unit 1 (Puget Sound Power & Light Co.) [STN-50-522] ³	Sedro Woolley, Wash.	GE	Boiling water	1277	3800	1990		
Skagit Nuclear Power Project, Unit 2 (Puget Sound Power & Light Co.) [STN-50-523] ³	Sedro Woolley, Wash.	GE	Boiling water	1288	3800	1992		
*Thomas L. Perkins Nuclear Station, Unit 1 (Duke Power Co.) [STN-50-488] ³	Davie County, N.C.	Comb.	Pressurized water	1288	3800	Indef.		
*Thomas L. Perkins Nuclear Station, Unit 2 (Duke Power Co.) [STN-50-489] ³	Davie County, N.C.	Comb.	Pressurized water	1280	3800	Indef.		
*Thomas L. Perkins Nuclear Station, Unit 3 (Duke Power Co.) [STN-50-490] ³	Davie County, N.C.	Comb.	Pressurized water	1280	3800	Indef.		
Vandalia Nuclear Project (Iowa Power & Light Co., Associated Electric Cooperative, Inc., and Central Iowa Power Cooperative)	Iowa	B&W	Pressurized water	1270		Indef.		
SHUT DOWN OR DISMANTLED								
Boiling Nuclear Superheater Power Station (AEC and Puerto Rico Water Resources Authority) ^{3,4}	Punta Higuera, P.R.	Comb.	Boiling water, integral nuclear superheat	16.5	50	1964	1968	
Carolinas-Virginia Tube Reactor (Carolinas-Virginia Nuclear Power Associates, Inc.) ^{3,4,7,}	Parr, S.C.	West	Pressure tube, heavy water	17	64	1963	1967	
Elk River Reactor (AEC and Rural Cooperative Power Association) ^{3,4,10}	Elk River, Minn.	AC	Boiling water	22	58.2	1962	1968	
Enrico Fermi Atomic Power Plant, Unit 1 (Power Reactor Development Co.) [50-16] ^{3,4}	Lagoon Beach, Mich.	PRDC	Sodium cooled, fast	60.9	200	1963	1973	
Hallam Nuclear Power Facility, Sheldon Station (AEC and Consumers Public Power District) ^{4,6}	Hallam, Nebr.	AI	Sodium graphite	75	240	1962	1964	
†Indian Point Station, Unit 1 (Consolidated Edison Co. of New York, Inc.) [50-3] ^{3,5}	Buchanan, N.Y.	B&W	Pressurized water	265	615	1962	1980	
Pathfinder Atomic Plant (Northern States Power Co.) ⁹	Sioux Falls, S. Dak.	AC	Boiling water	58.5	190	1964	1967	
Peach Bottom Atomic Power Station, Unit 1 (Philadelphia Electric Co.) [50-171] ^{3,4}	Peach Bottom, Pa.	GA	High temperature gas cooled	40	115	1966	1974	
Piqua Nuclear Power Facility (AEC and City of Piqua) ^{3,4,8}	Piqua, Ohio	AI	Organic cooled and moderated	11.4	45.5	1963	1966	
B. Dual-Purpose Plants								
OPERABLE	Richland, Wash.	UNCNI	Graphite	850	4000	1963		
N Reactor (DOE and Washington Public Power Supply System) ¹¹								
BEING BUILT								
Midland Nuclear Power Plant, Unit 1 (Consumers Power Co. of Michigan) [50-329] ^{3,12}	Midland, Mich.	B&W	Pressurized water	460	2468	1985		
Midland Nuclear Power Plant, Unit 2 (Consumers Power Co. of Michigan) [50-330] ^{3,12}	Midland, Mich.	B&W	Pressurized water	811	2468	1984		

*Project terminated 2-23-82.

†Operating authority of Indian Point 1 was revoked on 6-19-80 by the Nuclear Regulatory Commission.

C. Propulsion (Maritime)

Name and/or owner	Nuclear designer	Shipbuilder	Type	Maximum shaft horsepower	Power, ¹ kW(t)	Start-up	Shut-down
SHUT DOWN Nuclear Ship SAVANNAH (Maritime Administration) ³	B&W	NYSC	Pressurized water	22,000	80,000	1961	1971

2. EXPERIMENTAL POWER-REACTOR SYSTEMS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Electric-Power Systems (Continued)

Name (all owned by DOE except as noted)	Designation	Location	Type	Plant, net kW(e)	Reactor, kW(t)	Start-up	Shut-down
SHUT DOWN OR DISMANTLED (Continued)							
Molten Salt Reactor Experiment	MSRE	Oak Ridge, Tenn.	ORNL	Single region, graphite moderated	No elec.	8,000	1965
Organic Moderated Reactor Experiment ¹⁴	OMRE	INEL Site, Idaho	AI	Organic cooled and moderated	No elec.	12,000	1957
Plutonium Recycle Test Reactor	PRTR	Richland, Wash.	PNL	Pressure tube, heavy-water moderated and cooled	No elec.	70,000	1960
Saxton Nuclear Experimental Reactor Project (Saxton Nuclear Experimental Corp.) ³	SRE	Saxton, Pa.	West.	Pressurized water	3,000	23,500	1962
Sodium Reactor Experiment (DOE and Southern California Edison Co.) ¹⁷	SEFOR	Santa Susana, Calif.	AI	Sodium graphite	5,700	20,000	1957
Southwest Experimental Fast Oxide Reactor (Southwest Atomic Energy Associates) ³	UHTREX	Strickler, Ark.	GE	Sodium cooled, fast	20,000	1969	1964
Ultra High Temperature Reactor Experiment Vallecitos Boiling Water Reactor (General Electric Company and Pacific Gas & Electric Co.) ²	VBNR	Los Alamos, N. Mex. Pleasanton, Calif.	LANL GE	Helium cooled Boiling water	No elec. 5,000	3,000 33,000	1970 1963

B. Auxiliary Power (SNAP)

SHUT DOWN OR DISMANTLED							
SNAP-2 Developmental System	S2DS	Santa Susana, Calif.	AI	NaK cooled	No elec.	50	1961
SNAP-2 Experimental Reactor	SER	Santa Susana, Calif.	AI	NaK cooled	No elec.	50	1959
SNAP-2/10A TSF Shielding Experiment	SNAP-TSF	Oak Ridge, Tenn.	AI-ORNL	NaK cooled	10	1967	1960
SNAP-8 Developmental Reactor	S8DR	Santa Susana, Calif.	AI	NaK cooled	No elec.	600	1973
SNAP-8 Experimental Reactor	S8ER	Santa Susana, Calif.	AI	NaK cooled	No elec.	600	1969
SNAP-10A Flight System Ground Test No. 1	S10FS-1	Los Alamos, N. Mex.	AI	NaK cooled	0.5	39	1962
SNAP-10A Flight System Ground Test No. 3 ²²	S10FS-3	Santa Susana, Calif.	AI	NaK cooled	0.5	39	1964
SNAP-10A Flight System ²²	S10FS-4	In orbit	AI	NaK cooled	0.5	39	1966
SNAP-10A Flight System	S10FS-5	Oak Ridge, Tenn.	AI	NaK cooled	0.5	39	1965
						39 (Spare)	1963

C. Space Propulsion (Rover)

Name (all owned by DOE except as noted)	Designation	Location	Type	Power, kW(t)	Year of operation	Dis-mantled
SHUT DOWN OR DISMANTLED						
Fuel Element Test Bed	NF-1	NRDS, Nev.	LANL	Open cycle, gaseous hydrogen	44,000	1972
Fuel Element Test Reactor	Pewee-1	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	514,000	1968
Fuel Element Test Reactor	Pewee-2	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	514,000	Indef.
						1973

Ground Experimental Engine Experiment	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	1968
Ground Experimental Engine Experiment	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	Indef.
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,096,000	1964
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	1965
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,120,000	1966
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,199,000	1967
Nuclear Rocket Reactor Engine System Test (NERVA)	NRX-A4/EST	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,155,000
Kiwi-A	NRDS, Nev.	LANL	Open cycle, gaseous hydrogen	70,000	1959
Kiwi-A Prime	NRDS, Nev.	LANL	Open cycle, gaseous hydrogen	85,000	1960
Kiwi-A3	NRDS, Nev.	LANL	Open cycle, gaseous hydrogen	100,000	1960
Kiwi-B1A	NRDS, Nev.	LANL	Open cycle, gaseous hydrogen	300,000	1961
Kiwi-B1B	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	90,000	1962
Kiwi-B4A	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	50,000	1962
Kiwi-B4D	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	1,000,000	1964
Kiwi-B4E	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	950,000	1964
Phoebus 1A	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	1,070,000	1965
Phoebus 1B	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	1,400,000	1967
Phoebus 2A	NRDS, Nev.	LANL	Open cycle, liquid hydrogen	4,200,000	1968

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

A. General Irradiation Test

	Name and/or owner	Designation	Location	Principal nuclear contractor	Operator	Type	Power, ¹ kW(t)	Start-up	Shutdown
OPERABLE									
Advanced Test Reactor (DOE)	ATR	INEL, Idaho	Ebasco-B&W						
BEING BUILT									
Fast Flux Test Facility (DOE)	FFTF	Richland, Wash.	HEDL						
SHUT DOWN OR DISMANTLED									
Engineering Test Reactor (DOE) ²³	ETR	INEL, Idaho	KE-GE						
General Electric Testing Reactor ³	GETR	Pleasanton, Calif.	Owner						
Materials Testing Reactor (DOE) ²⁴	MTR	INEL, Idaho	ORNL-ANL-Blaw-Knox	INC					
Plum Brook Reactor Facility (NASA) ³	NASA-TR	Sandusky, Ohio	NASA						
Westinghouse Testing Reactor ³	WTR	Waltz Mill, Pa.	Owner						

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

B. High-Power Research and Test

	Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE								
Brookhaven High Flux Beam Research Reactor (DOE)	HFBR	Upton, N. Y.	BNL	Heavy water		60,000	1965	
Brookhaven Medical Research Reactor (DOE)	BMRR	Upton, N. Y.	Daystrom	Tank		5,000	1959	
High Flux Isotope Reactor (DOE)	HFIR	Oak Ridge, Tenn.	ORNL	Tank flux trap		100,000	1965	
National Bureau of Standards Reactor ³	NBSR	Gaithersburg, Md.	NBS-B&R	Heavy water		10,000	1967	
Oak Ridge Research Reactor (DOE)	ORR	Oak Ridge, Tenn.	ORNL	Tank		30,000	1958	
Omega West Reactor (DOE)	OWR	Los Alamos, N. Mex.	LANL	Tank		8,000	1956	
Union Carbide Corporation Reactor ³	UCNR	Sterling Forest, N. Y.	AMF	Pool		5,000	1961	
SHUT DOWN OR DISMANTLED								
Ames Laboratory Research Reactor (DOE)	ALRR	Ames, Iowa	AMF	Heavy water		5,000	1965	1977
Argonne Research Reactor (DOE)	CP-5	Argonne, Ill.	ANL	Heavy water		5,000	1954	1979
Babcock & Wilcox Nuclear Development Center Test Reactor ³	BAWTR	Lynchburg, Va.	Owner	Pool		6,000	1964	1971
Industrial Reactor Laboratories, Inc. ³	SER	Plainsboro, N. J.	AMF	Pool		5,000	1958	1975
Sandia Engineering Reactor (DOE)		Kirtland AFB, East, N. Mex.	Sandia	Tank		5,000	1961	1970

C. Safety Research and Test

OPERABLE								
Loss of Fluid Test (DOE)	LOFT	INEL, Idaho	EG & G-ID	Pressurized water		55,000	1978	
Power-Burst Facility (DOE)	PBF	INEL, Idaho	EG & G-ID	Open tank		Transient	1973	
Transient Reactor Test (DOE)	TREAT	INEL Site, Idaho	ANL	Graphite		28,000		
SHUT DOWN OR DISMANTLED								
Intrinsic Subcriticality Experiment (DOE) ²⁷	SNAPTRAN-1	Los Alamos, N. Mex.	AI	Be-reflected SNAP-10A		Transient	1968	1971
King Intense Neutron Generator (DOE)	Kinglet	Los Alamos, N. Mex.	LANL	Homogeneous		Transient	1972	1977
Kiwi-Transient Test Reactor (DOE)	Kiwi-TTR	NRDS, Nev.	LANL	Kiwi/NERVA		Transient	1965	1965
SNAP-10A Transient Test No. 2 (DOE) ²⁵	SNAPTRAN-2	INEL, Idaho	AI-PPC	Be-reflected		Transient	1965	1966
SNAP-10A Transient Test No. 3 (DOE) ²⁵	SNAPTRAN-3	INEL, Idaho	PPC-AI	SNAP-10A		H ₂ O-reflected	1964	1964
Special Power Excursion Reactor Test No. 1 (DOE)	SPERT-1	INEL, Idaho	PPC	SNAP-10A		Open tank	Transient	1955
Special Power Excursion Reactor Test No. 2 (DOE)	SPERT-2	INEL, Idaho	PPC	Homogeneous		Pressurized water	Transient	1960
Special Power Excursion Reactor Test No. 3 (DOE)	SPERT-3	INEL, Idaho	PPC	Kiwi/NERVA		Pressurized water	Transient	1958
Special Power Excursion Reactor Test No. 4 (DOE)	SPERT-4	INEL, Idaho	INC	Be-reflected		Pool	Transient	1970

D. General Research

Name and/or owner	Designation	Location	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE						
Aerotest Operations, Inc. ³						
Annular Core Research Reactor (DOE) ⁸⁰						
Argonne Thermal Source Reactor (DOE)	ATSR	San Ramon, Calif.	Pool-TRIGA core	250	1965	
Biological Research Reactor (DOE)	JANUS	Kirtland AFB, East, N. Mex.	UO ₂ BeO	2000 and transient	1978	
Bulk Shielding Reactor (DOE) ²⁸	BSR	Argonne, Ill.	Thermal	10	1957	
Dow Chemical Co. ³	TRIGA-Mk I	Oak Ridge, Tenn.	Tank	200	1964	
Fast Source Reactor (DOE)	AFSR	Midland, Mich.	Pool	2,000	1950	
General Atomic Company, Advanced TRIGA-Mk F	TRIGA-Mk F	INEL Site, Idaho	U-Zr hydride	100	1967	
Prototype Reactor ³	TRIGA-Mk I	La Jolla, Calif.	Fast	1	1959	
General Atomic Company, TRIGA-Mk I Prototype Reactor ^{3,30}	NTR	Pleasanton, Calif.	U-Zr hydride	1,500	1960	
General Electric Nuclear Test Reactor ³	HPRR	Oak Ridge, Tenn.	Light water	250	1958	
Health Physics Research Reactor (DOE) ³¹	TRIGA-Mk I	Richland, Wash.	Fast burst	100	1957	
Neutron Radiography Facility (DOE)	NRAD	INEL, Idaho	U-Zr hydride	10	1962	
Neutron Radiography Facility (DOE)	TRIGA-Mk F	Hawthorne, Calif.	Pool-TRIGA core	250	1977	
Northrop Corporate Laboratories (Space Radiation Laboratory) ^{3,30}	TRIGA-Mk I	Omaha, Nebr.	U-Zr hydride	1,000	1963	
Omaha Veterans Administration Hospital ³	SPR-II	Fort Kearney, R. I.	Pool	18	1959	
Rhode Island Nuclear Science Center ³	SPR-III	Kirtland AFB, East, N. Mex.	Prompt burst	2,000	1964	
Sandia Pulsed Reactor II (DOE)	TSR-2	Kirtland AFB, East, N. Mex.	Prompt burst	Transient	1967	
Sandia Pulsed Reactor III (DOE)	TRIGA-Mk I	Oak Ridge, Tenn.	Light water	Transient	1975	
Tower Shielding Reactor No. 2 (DOE)		Denver, Colo.	U-Zr hydride	1,000	1960	
U. S. Geological Survey Laboratory (Department of the Interior) ^{3,30}		Zion, Ill.	West.	1,000	1969	
Westinghouse Nuclear Training Center ³				10	1972	
BELNG BUILT						
Neutron Radiography Facility (DOE)	TRIGA-Mk I	FMEF-Richland, Wash.	HEDL	U-Zr hydride	1,000	1984
SHUT DOWN OR DISMANTLED						
Accelerator Pulsed Fast Critical Assembly ^{3,42}	APFA-III	La Jolla, Calif.	Fast	1	1967	1973
American Standard Inc. ³⁵	UTR-1	Mountain View, Calif.	Graphite/water	Neglig.	1958	1960
Annular Core Pulsed Reactor (DOE) ⁸⁰	ACPR	Kirtland AFB, East, N. Mex.	U-Zr hydride	Transient	1967	1977
Argonne CP-3, rebuilt as CP-3' (Manhattan Engineer District—DOE)	CP-3'	Palos Park, Ill.	Heavy water	300	1944	1963
Argonne Low Power Research Reactor (DOE) ³⁹	Juggernaut	Argonne, Ill.	Met. Lab.			
Argonne National Laboratory (DOE)	AGN-201-108	Argonne, Ill.	ANL			
Argonne Nuclear Assembly for University Training (DOE)	Argonaut (CP-11)	Argonne, Ill.	AGN			
Atomics International ³	L-47	Canoga Park, Calif.	ANL			
Babcock & Wilcox Lynchburg Pool Reactor ³	LPR	Lynchburg, Va.	AI			
Battelle Memorial Institute ³	BRR	West Jefferson, Ohio	Owner			
Brookhaven Graphite Research Reactor	BGRR	Upton, N. Y.	AMF			
Brookhaven Neutron Source Reactor No. 1 (DOE)			AU Inc.			
Brookhaven Neutron Source Reactor No. 2 (DOE)	SCHIZO	Upton, N. Y.	AU Inc.			
	PHRENIC	Upton, N. Y.	AU Inc.			

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

D. General Research (Continued)

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, 1 kW(t)	Start-up	Shut-down
SHUT DOWN OR DISMANTLED (Continued)							
Chicago File 1, rebuilt as CP-2 (Manhattan Engineer District—DOE) ³⁴	CP-2	Chicago, Ill.	Met. Lab.	Graphite	0.2–2	1942	1954
Curtiss-Wright Nuclear Research Laboratory of the Commonwealth of Pennsylvania		Queanna, Pa.	Owner	Pool	1,000	1958	1966
DOE Demonstration Reactor ⁴³	Demo Reac	Oak Ridge, Tenn.	Lockheed	Pool	10	1969	1969
European-Asian Exhibit Program (DOE) ³³	BNL/FS-1	Oak Ridge, Tenn.	Lockheed	Pool	10	1963	1969
Fast Neutron Source Reactor (DOE)	TRIGA-Mk I	Upton, N. Y.	BNL	Fast		1967	1970
General Atomic Co. (World Agricultural Fair—U. S. Exhibit Reactor) ³⁶		San Diego, Calif.	Owner	U-Zr hydride	50	1960	1960
High Temperature Lattice Test Reactor (DOE)	HTLTR	Richland, Wash.	PNL	Graphite	2	1967	1971
Illinois Institute of Technology Research Institute (Armour Research Foundation) ³	ARR(L-54)	Chicago, Ill.	AI	Homogeneous	75	1956	1967
Kinetic Experiment on Water Boilers (Rockwell International) ^{3,32}	KEWB	Santa Susana, Calif.	AI	Homogeneous	Transient	1956	1967
Livermore Pool Type Reactor (DOE)	LPTR	Livermore, Calif.	FW	Tank	3,000	1957	1980
Livermore Water Boiler (DOE)	LJWB	Livermore, Calif.	AI	Homogeneous	0.5	1953	1961
Lockheed Aircraft Corp.		Dawsonville, Ga.	Lockheed	Pool	Neglig.	1960	1960
Los Alamos Fast Reactor (DOE)	Clementine	Los Alamos, N. Mex.	LANL	Fast, plutonium fuel, mercury cooled	25	1946	1953
Los Alamos LOPO Reactor (DOE)	LOPO	Los Alamos, N. Mex.	LANL	Homogeneous		1944	1944
Los Alamos Water Boiler (DOE)	HYP0	Los Alamos, N. Mex.	LANL	Homogeneous	5.5	1944	1950
Los Alamos Water Boiler (DOE)	SUP0	Los Alamos, N. Mex.	LANL	Homogeneous	25	1950	1974
Louisiana State University Nuclear Science Center (Phillips Petroleum Co.) ³⁷	SNARE	Baton Rouge, La.	Sandia	Pool	2	1965	1966
Low Intensity Test Reactor (DOE)	LITR	Oak Ridge, Tenn.	ORNL	Tank	3,000	1950	1968
NASA Mock-Up Reactor ³	MUR	Sandusky, Ohio	Lockheed	Light water, pool	100	1963	1973
Nuclear Effects Reactor (DOE) ³⁸	FRAN	NTS, Nev.	LLNL/PPC	Prompt burst	Transient	1962	1970
Nuclear Effects Reactor (DOE)	KUKLA	San Diego, Calif.	LLNL	Prompt burst	Transient	1959	1964
Nuclear Examination Reactor (Rockwell International) ^{3,29}	L-85 (AE-6)	Santa Susana, Calif.	AI	Homogeneous	3	1952	1980
Oak Ridge Graphite Reactor (DOE)	X-10	Oak Ridge, Tenn.	CL	Graphite	3,500	1943	
Pawling Research Reactor (United Nuclear Corp.) ³	PRR	Pawling, N. Y.	UNC	Light water	Neglig.	1958	1971
Physical Constants Test Reactor (DOE)	PCTR	Richland, Wash.	PNL	Graphite	0.1	1955	1972
Radiation Effects Reactor (Lockheed Aircraft Corp.) ^{3,40}	RER	Dawsonville, Ga.	Lockheed	Pool	3,000	1958	1970
Rockwell International ³	L-77	Canoga Park, Calif.	AI	Homogeneous	Neglig.	1958	1974
Sandia Pulsed Reactor (DOE)	SPR	Kirtland AFB, East, N. Mex.	Sandia	Prompt burst	Transient	1961	1967
Shield Test and Irradiation Reactor (DOE) ⁴¹	STIR	Santa Susana, Calif.	AI	Pool	1,000	1961	1972
Thermal Test Reactor No. 2 (DOE)	TTR-2	Richland, Wash.	PNL	Graphite	0.1	1955	1972
Torrey Pines, TRIGA-Mk III Reactor (General Atomic) ³	TRIGA-Mk III	La Jolla, Calif.	Owner	U-Zr hydride	1,500	1966	1973
Tower Shielding Reactor No. 1	TSR-1	Oak Ridge, Tenn.	ORNL	Tank	500	1954	1958
UTR Test Reactor (American Radiator & Standard Sanitary Corp.) ³		Mountain View, Calif.	Owner	Graphite/water	Neglig.	1961	1963

E. University Research and Teaching

(Footnote 3 applies to all reactors in this section except as noted.)

	Designation	Location	Type	Power, ¹ kW(t)	Start- up	Shut- down	Principal nuclear contractor
OPERABLE							
Arizona, University of							
Brigham Young University							
California, Berkeley, University of ³⁰							
California, Irvine, University of ³⁰							
California, Los Angeles, University of, School of							
Engineering and Applied Science							
California, Santa Barbara, University of ³⁰							
Catholic University of America							
Columbia University ³⁰							
Cornell University ³⁰							
Cornell University Zero Power Reactor							
Florida, University of							
Georgia Institute of Technology ⁴⁵							
Georgia Tech. Research Reactor							
Idaho State University ⁵²							
Illinois, University of							
Illinois, University of							
Iowa State University ³⁰							
Kansas State University ³⁰							
Kansas, University of							
Lowell, University of							
Manhattan College							
Maryland, University of							
Massachusetts Institute of Technology							
Memphis State University ^{30,53}							
Michigan State University ^{30,53}							
Michigan, University of (Ford Nuclear Reactor)							
Missouri, University of							
Missouri at Rolla, University of							
New Mexico, University of ⁴⁶							
North Carolina State University							
Ohio State University							
Oklahoma, University of ³⁰							
Oregon State University ³⁰							
Penn State TRIGA Reactor (Pennsylvania State University) ^{30,51}							
Purdue University							
Reed College							
State University of New York (Western New York Nuclear Research Center, Inc.)							
Texas A&M University (Nuclear Science Center Reactor) ^{30,49}							
NSCR							
College Station, Tex.							

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

E. University Research and Teaching (Continued)

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut down
OPERABLE (Continued)							
Texas A&M University	AGN-210M-106	College Station, Tex.	AGN	Homog. solid	Neglig.	1957	1980
Texas at Austin, University of ³⁰	TRIGA-Mk I	Austin, Tex.	GA	U-Zr hydride	250	1963	1974
*Tuskegee Institute	AGN-20-102	Tuskegee, Ala.	AGN	Homog. solid	Neglig.	1974	1974
Utah, University of	TRIGA-Mk I	Salt Lake City, Utah	GA	U-Zr hydride	250	1975	1975
Utah, University of	AGN-20-107	Salt Lake City, Utah	AGN	Homog. solid	Neglig.	1957	1959
Virginia Polytechnic Institute	UTR-10	Blacksburg, Va.	AS Inc.	Graphite/water	100	1960	1974
Virginia, University of	CAVALIER	Charlottesville, Va.	Owner	Pool	Neglig.	1966	1966
Virginia, University of	UVAR	Charlottesville, Va.	Owner-B&W	Pool-TRIGA core	2,000	1967	1967
Washington State University	WSTR	Pullman, Wash.	GA	Graphite/water	1,000	1961	1961
Washington, University of	Educator	Seattle, Wash.	AMF	Pool-TRIGA core	1,000	1967	1967
Wisconsin, University of ^{30,48}	TRIGA	Madison, Wis.	GA	Pool-TRIGA core	1,000	1959	1959
Worcester Polytechnic Institute		Worcester, Mass.	GE	Pool	10	1959	1974
SHUT DOWN OR DISMANTLED							
California State Polytechnic University ⁵⁴	AGN-201-100	San Luis Obispo, Calif.	AGN	Homog. solid	Neglig.	1973	1980
Colorado State University	AGN-201-109	Fort Collins, Colo.	AGN	Homog. solid	Neglig.	1957	1974
Delaware, University of	AGN-201-113	Newark, Del.	AGN	Homog. solid	Neglig.	1958	1978
Leland Stanford University		Palo Alto, Calif.	GE	Pool	10	1959	1974
Mississippi State University ⁵⁵	RRR	State College, Miss.	Owner-NSA	Homogeneous	Neglig.	1963	1974
Nevada, University of	L-77	Reno, Nev.	AI	Homogeneous	Neglig.	1963	1974
North Carolina State University		Raleigh, N. C.	Cook	Graphite/water	10	1960	1973
Oregon State University	AGN-201-114	Corvallis, Oreg.	AGN	Homog. solid	Neglig.	1958	1974
Polytechnic Institute of New York ⁵⁶	AGN-201M-105	New York, N. Y.	AGN	Homog. solid	Neglig.	1967	1974
Puerto Rico Nuclear Center (DOE) ⁴⁷	L-77	Mayagüez, P. R.	AI	Homogeneous	Neglig.	1959	1979
Puerto Rico Nuclear Center (DOE) ⁷⁸	TRIGA-FLIP	Mayagüez, P. R.	GA	Pool-TRIGA core	2,000	1972	1976
West Virginia University	AGN-211-103	Morgantown, W. Va.	AGN	Homog. solid, pool	Neglig.	1959	1972
William Marsh Rice University	AGN-211-101	Houston, Tex.	AGN	Homog. solid, pool	Neglig.	1959	1965
Wyoming, University of	L-77	Laramie, Wyo.	AI	Homogeneous	Neglig.	1959	1974

*The AGN-201-102 was licensed to operate but never was started up. Tuskegee Institute is currently taking steps to return the fuel to the Department of Energy at Oak Ridge, with the intent of terminating the operating license.

1. MATERIALS PRODUCTION

(All owned by DOE)

PART II PRODUCTION REACTORS

Designation	Nuclear designer	Type	Location	Start-up	Shut-down
OPERABLE*					
C Reactor	Du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1955	
K Reactor	Du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	
P Reactor	Du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	
SHUT DOWN					
B Reactor	Du Pont	Graphite	Richland, Wash.	1944	1968
C Reactor	GE	Graphite	Richland, Wash.	1952	1969
D Reactor	Du Pont	Graphite	Richland, Wash.	1944	1967
DR Reactor	GE	Graphite	Richland, Wash.	1950	1964
F Reactor	Du Pont	Graphite	Richland, Wash.	1945	1965
H Reactor	GE	Graphite	Richland, Wash.	1949	1965
KE Reactor	GE	Graphite	Richland, Wash.	1955	1971
KW Reactor	GE	Graphite	Richland, Wash.	1955	1970
†L Reactor	Du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	1968
‡R Reactor	Du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1953	1964

2. PROCESS DEVELOPMENT

Name (all owned by DOE)	Designation	Location	Nuclear designer	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE							
305-M Test Pile	Test Pile	Savannah River Plant, Aiken, S. C.	Du Pont	Graphite	1	1953	
SHUT DOWN OR DISMANTLED							
Hanford 305 Test Reactor	HTR	Richland, Wash.	Du Pont	Graphite	Neglig.	1944	1976
†Lattice Test Reactor	LTR	Savannah River Laboratory, Aiken, S. C.	Du Pont	Heavy water	1	1967	1979
†Process Development Pile	PDP	Savannah River Laboratory, Aiken, S. C.	Du Pont	Heavy water	1	1953	1979
‡Standard Pile	SP	Savannah River Laboratory, Aiken, S. C.	Du Pont	Graphite	2-10	1953	1979

*The N Reactor, Richland, Wash., is listed on page 18; see also footnote 11. †Being upgraded to restart capability. ‡Placed on standby.

1. DEFENSE POWER-REACTOR APPLICATIONS

PART III MILITARY REACTORS

A. Remote Installations

Name (all owned by DOD)	Designation ⁵⁷	Location	Principal nuclear contractor	Type	Plant, net kW(e)	Reactor, kW(t)	Start-up	Shut-down	Power ¹
SHUT DOWN OR DISMANTLED									
Portable Medium Power Plant No. 1	PM-I	Sundance, Wyo.	Martin	Pressurized water	1,000	9,370	1962	1968	
Portable Medium Power Plant No. 2A ⁵⁹	PM-2A	Camp Century, Greenland	Alco	Pressurized water	1,560	10,000	1960	1963	
Portable Medium Power Plant No. 3A	PM-3A	McMurdo Sound, Antarctica	Martin	Pressurized water	1,500	9,510	1962	1973	
Stationary Medium Power Plant No. 1	SM-1	Fort Belvoir, Va.	Alco	Pressurized water	1,855	10,000	1957	1973	
Stationary Medium Power Plant No. 1A ⁶⁰	SM-1A	Fort Greely, Alaska	Alco	Pressurized water	1,650	20,200	1962	1972	
STURGIS Floating Nuclear Power Plant ⁵⁸	MH-1A	Gatun Lake, Canal Zone	Martin	Pressurized water	10,000	45,000	1967		

B. Propulsion (Naval)

Name (all owned by U. S. Navy)	Designation ⁶¹	Shipbuilder	Start-up	Name (all owned by U. S. Navy)	Designation ⁶¹	Shipbuilder	Start-up	Shut-down
OPERABLE (Continued)								
USS SEAWOLF ⁶²	SSN575	Electric Boat (Groton)	1960	USS INDIANAPOLIS	SSN697	Electric Boat (Groton)	1980	
USS SKATE	SSN578	Electric Boat (Groton)	1957	USS BREMERTON	SSN698	Electric Boat (Groton)	1981	
USS SWORDFISH	SSN579	Portsmouth	1958	USS JACKSONVILLE	SSN699	Electric Boat (Groton)	1981	
USS SARGO	SSN583	San Francisco Bay	1958	USS DALLAS	SSN700	Electric Boat (Groton)	1981	
USS SEADRAGON	SSN584	Portsmouth	1959	USS LA JOLLA	SSN701	Electric Boat (Groton)	1981	
USS SKIPJACK	SSN585	Electric Boat (Groton)	1958	USS PHOENIX	SSN702	Electric Boat (Groton)	1981	
USS SCAMP	SSN588	San Francisco Bay	1961	USS BOSTON	SSN703	Electric Boat (Groton)	1981	
USS SCULPIN	SSN590	Ingalls	1961	USS SAN FRANCISCO	SSN711	Newport News	1981	
USS SHARK	SSN591	Newport News	1960	USS ATLANTA	SSN712	Newport News	1981	
USS SNOOK	SSN592	Ingalls	1961	USS ROBERT E. LEE	SSBN601	Electric Boat (Groton)	1960	
USS PERMIT	SSN594	San Francisco Bay	1962	USS LAFAYETTE	SSBN616	Electric Boat (Groton)	1963	
USS PLUNGER	SSN595	San Francisco Bay	1962	USS ALEXANDER HAMILTON	SSBN617	Electric Boat (Groton)	1963	
USS BARB	SSN596	Ingalls	1963	USS ANDREW JACKSON	SSBN619	San Francisco Bay	1963	
USS TULLIBEE	SSN597	Electric Boat (Groton)	1960	USS JOHN ADAMS	SSBN620	Portsmouth	1964	
USS GEORGE WASHINGTON	SSN598	Electric Boat (Groton)	1959	USS JAMES MONROE	SSBN622	Newport News	1963	
USS PATRICK HENRY	SSN599	Electric Boat (Groton)	1960	USS NATHAN HALE	SSBN623	Electric Boat (Groton)	1963	
USS POLLACK	SSN603	NYSC	1963	USS WOODROW WILSON	SSBN624	San Francisco Bay	1963	
USS HADDO	SSN604	NYSC	1964	USS HENRY CLAY	SSBN625	Newport News	1963	
USS JACK	SSN605	Portsmouth	1965	USS DANIEL WEBSTER	SSBN626	Electric Boat (Groton)	1964	
USS TINOSA	SSN606	Portsmouth	1963	USS JAMES MADISON	SSBN627	Newport News	1964	
USS DACE	SSN607	Ingalls	1963	USS TECUMSEH	SSBN628	Electric Boat (Groton)	1964	
USS ETHAN ALLEN	SSN608	Ingalls	1961	USS DANIEL BOONE	SSBN629	San Francisco Bay	1963	
USS SAM HOUSTON	SSN609	Electric Boat (Groton)	1961	USS JOHN C. CALHOUN	SSBN630	Newport News	1964	
USS THOMAS A. EDISON	SSN610	Ingalls	1961	USS ULYSSES S. GRANT	SSBN631	Electric Boat (Groton)	1964	
USS JOHN MARSHALL	SSN611	Ingalls	1962	USS VON STEUBEN	SSBN632	Newport News	1964	
USS GUARDFISH	SSN612	NYSC	1966	USS CASIMIR PULASKI	SSBN633	Electric Boat (Groton)	1964	
USS FLASHER	SSN613	Electric Boat (Groton)	1966	USS STONEWALL JACKSON	SSBN634	San Francisco Bay	1964	

USS GREENLING	SSN614	GD (Quincy)	1967	USS SAM RAYBURN	SSBN635	Newport News	1964
USS GATO	SSN615	GD (Quincey)	1967	USS NATHANIEL GREENE	SSBN636	Portsmouth	1964
USS THOMAS JEFFERSON	SSN618	Newport News	1962	USS BENJAMIN FRANKLIN	SSBN640	Electric Boat (Groton)	1965
USS HADDOCK	SSN621	Ingalls	1967	USS SIMON BOLIVAR	SSBN641	Newport News	1965
USS STURGEON	SSN637	Electric Boat (Groton)	1966	USS KAMEHA MEHA	SSBN642	San Francisco Bay	1965
USS WHALE	SSN638	GD (Quincy)	1968	USS GEORGE BANCROFT	SSBN643	Electric Boat (Groton)	1965
USS TAUTOG	SSN639	Ingalls	1968	USS LEWIS AND CLARK	SSBN644	Newport News	1965
USS GRAYLING	SSN646	Portsmouth	1969	USS JAMES K. POLK	SSBN645	Electric Boat (Groton)	1966
USS POGY	SSN647	NYSC/Ingalls	1970	USS GEORGE C. MARSHALL	SSBN654	Newport News	1966
USS ASPRO	SSN648	Ingalls	1968	USS HENRY L. STIMSON	SSBN655	Electric Boat (Groton)	1966
USS SUNFISH	SSN649	GD (Quincy)	1968	USS GEORGE WASHINGTON	SSBN656	Newport News	1966
USS PARGO	SSN650	Electric Boat (Groton)	1967	CARVER			
USS QUEENFISH	SSN651	Newport News	1966	USS FRANCIS SCOTT KEY	SSBN657	Electric Boat (Groton)	1966
USS PUFFER	SSN652	Ingalls	1969	USS MARIANO G. VALLEJO	SSBN658	San Francisco Bay	1966
USS RAY	SSN653	Newport News	1967	USS WILL ROGERS	SSBN659	Electric Boat (Groton)	1967
USS SAND LANCE	SSN660	Portsmouth	1971	USS OHIO	SSBN726	Electric Boat (Groton)	1981
USS LAPON	SSN661	Newport News	1967	USS ENTERPRISE (8 reactors)	CVN65	Newport News	1960
USS GURNARD	SSN662	San Francisco Bay	1968	USS NIMITZ (2 reactors)	CVN68	Newport News	1974
USS HAMMERHEAD	SSN663	Newport News	1967	USS DWIGHT D. EISENHOWER	CVN69	Newport News	1977
USS SEA DEVIL	SSN664	Newport News	1968	(2 reactors)			
USS GUITARRO	SSN665	Mare Island	1972	USS CARL VINSON (2 reactors)	CVN70	Newport News	1981
USS HAWKBILL	SSN666	Mare Island	1970	USS LONG BEACH (2 reactors)	CGN9	Bethlehem	1961
USS BERGALL	SSN667	Electric Boat (Groton)	1969	USS BAINBRIDGE (2 reactors)	CGN25	Bethlehem	1962
USS SPADEFISH	SSN668	Newport News	1969	USS TRUXTUN (2 reactors)	CGN35	NYSC	1967
USS SEA HORSE	SSN669	Electric Boat (Groton)	1969	USS CALIFORNIA (2 reactors)	CGN36	Newport News	1973
USS FINBACK	SSN670	Newport News	1969	USS SOUTH CAROLINA (2 reactors)	CGN37	Newport News	1974
USS NARWHAL	SSN671	Electric Boat (Groton)	1969	USS VIRGINIA (2 reactors)	CGN38	Newport News	1976
USS PINTADO	SSN672	Mare Island	1970	USS TEXAS (2 reactors)	CGN39	Newport News	1977
USS FLYING FISH	SSN673	Electric Boat (Groton)	1969	USS MISSISSIPPI (2 reactors)	CGN40	Newport News	1978
USS TREPANG	SSN674	Newport News	1970	USS ARKANSAS (2 reactors)	CGN41	Newport News	1980
USS BLUEFISH	SSN675	Newport News	1970	Deep Submersion Research Vehicle	NR-1	Electric Boat (Groton)	1969
USS BILLFISH	SSN676	Newport News	1970				
USS DRUM	SSN677	Newport News	1971	BEING BUILT			
USS ARCHERFISH	SSN678	Electric Boat (Groton)	1971	BALTIMORE			
USS SILVERSIDES	SSN679	Newport News	1971	CORPUS CHRISTI			
USS WILLIAM H. BATES	SSN680	Electric Boat (Groton)	1972	ALBUQUERQUE			
USS BATFISH	SSN681	Newport News	1972	PORTSMOUTH			
USS TUNNY	SSN682	Electric Boat (Groton)	1973	Submarine			
USS PARCHE	SSN683	Electric Boat (Groton)	1974	Submarine			
USS CAVALLA	SSN684	Electric Boat (Groton)	1972	Submarine			
USS GLENARD P. LIPSCOMB	SSN685	San Francisco Bay	1974	HOUSTON			
USS L. MENDELL RIVERS	SSN686	Newport News	1974	NORFOLK			
USS RICHARD B. RUSSELL	SSN687	Portsmouth	1974	BUFFALO			
USS LOS ANGELES	SSN688	Electric Boat (Groton)	1976	SALT LAKE CITY			
USS BATON ROUGE	SSN689	Newport News	1977	Submarine			
USS PHILADELPHIA	SSN690	Electric Boat (Groton)	1976	Submarine			
USS MEMPHIS	SSN691	Newport News	1977	Submarine			
USS OMAHA	SSN692	Electric Boat (Groton)	1977	Submarine			
USS CINCINNATI	SSN693	Electric Boat (Groton)	1978	Submarine			
USS GROTON	SSN694	Electric Boat (Groton)	1978	Submarine			
USS BIRMINGHAM	SSN695	Newport News	1978	Submarine			
USS NEW YORK CITY	SSN696	Electric Boat (Groton)	1978	Submarine			

1. DEFENSE POWER-REACTOR APPLICATIONS

PART II MILITARY REACTORS

B. Propulsion (Naval) (Continued)

Name (all owned by U. S. Navy)	Designation ⁶¹	Shipbuilder	Start-up	Name (all owned by U. S. Navy)	Designation ⁶¹	Shipbuilder	Start-up	Shut-down
BEING BUILT (Continued)								
Submarine	SSN724	Electric Boat (Groton)						
Submarine	SSN725	Electric Boat (Groton)						
MICHIGAN	SSBN727	Electric Boat (Groton)						
FLORIDA	SSBN728	Electric Boat (Groton)						
GEORGIA	SSBN729	Electric Boat (Groton)						
RHODE ISLAND	SSBN730	Electric Boat (Groton)						
Submarine	SSBN731	Electric Boat (Groton)						
Submarine	SSBN732	Electric Boat (Groton)						
Submarine	SSBN733	Electric Boat (Groton)						
Submarine	SSBN734	Electric Boat (Groton)						
BEING BUILT (Continued)								
THEODORE ROOSEVELT								
USS NAUTILUS	CVN71	Newport News						
SEAWOLF Sodium Reactor ⁶²	SSN571	Electric Boat (Groton)	1954					1980
USS TRITON (2 reactors)	SSN586	Electric Boat (Groton)	1957	1959				
USS HALIBUT	SSN587	San Francisco Bay	1959	1968				1976
USS SCORPION ⁶³	SSN589	Electric Boat (Groton)	1960	1968				
USS THRESHER ⁶³	SSN593	Portsmouth	1961	1963				
USS THEODORE ROOSEVELT	SSBN600	Mare Island	1960	1981				
USS ABRAHAM LINCOLN	SSBN602	Electric Boat (Groton)	1960	1981				

2. DEVELOPMENTAL POWER

A. Electric-Power Experiments and Prototypes

Name (all owned by DOE)	Designation ⁵⁷	Location	Principal nuclear contractor	Type	Power ¹ Plant, net kW(e)	Reactor, kW(t)	Start-up	Shut-down
SHUT DOWN OR DISMANTLED								
Gas Cooled Reactor Experiment	GCRE	INEL Site, Idaho	AGN	Gas cooled, light water moderated	No elec.	2,200	1960	1962
Mobile Low Power Plant No. 1	ML-1	INEL Site, Idaho	AGN	Gas cooled, light water moderated	300	3,300	1961	1965
Stationary Low Power Plant No. 1	SL-1	INEL Site, Idaho	ANL	Boiling water	300	2,200	1958	1961

B. Propulsion Experiments and Prototypes

Name (all owned by DOE)	Designation	Location	Principal nuclear contractor	Type	Power, kW(t)	Start-up	Shut-down
OPERABLE							
Destroyer Reactor Prototype	DIG	West Milton, N. Y.	GE	Pressurized water	1962		
Large Ship Reactor Prototype (2 reactors)	AIW	INEL Site, Idaho	West.	Pressurized water	1958		
Modifications and Additions to Reactor Facility	MARF	West Milton, N. Y.	GE	Pressurized water	1976		
Natural Circulation Test Plant	S5G	INEL Site, Idaho	West.	Pressurized water	1965		
Small Submarine Reactor Prototype	SIC	Windsor, Conn.	GE	Pressurized water	1959		
SIW Reactor Facility	SIW	INEL Site, Idaho	West.	Pressurized water	1953		
Submarine Advanced Reactor Prototype	S3G	West Milton, N. Y.	GE	Pressurized water	1958		
Trident Prototype	S8G	West Milton, N. Y.	GE	Pressurized water	1978		

SHUT DOWN OR DISMANTLED

Aircraft Reactor Experiment	ARE	Oak Ridge, Tenn.	ORNL	Molten salt	1,500	1954
Experimental Propulsion Test Reactor ⁶⁴	TORY IIA	NTS, Nev.	LLNL	Air cooled	150,000	1960
Experimental Propulsion Test Reactor	TORY IIC	NTS, Nev.	LLNL	Air cooled	600,000	1964
Heat Transfer Reactor Experiment No. 1	HTRE-1	INEL Site, Idaho	ANPD	Air cooled	20,000	1956
Heat Transfer Reactor Experiment No. 2	HTRE-2	INEL Site, Idaho	ANPD	Air cooled	14,000	1957
Heat Transfer Reactor Experiment No. 3	HTRE-3	INEL Site, Idaho	ANPD	Air cooled	32,000	1961
Submarine Intermediate Reactor Mark A	SIG	West Milton, N. Y.	GE	Sodium	1955	1957

3. TEST AND RESEARCH

A. Test

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
SHUT DOWN OR DISMANTLED							
Aerospace Systems Test Reactor (USAF)	ASTR	Fort Worth, Tex.	Convair	Light water	10,000	1954	1971
Ground Test Reactor (USAF)	GTR	Fort Worth, Tex.	Convair	Pool	10,000	1953	1973
Nuclear Engineering Test Reactor (USAF)	NETR	Dayton, Ohio	Maxon- AC	Tank	10,000	1965	1970

B. Research

OPERABLE							
Aberdeen Pulsed Reactor Facility (Ballistic Research Laboratories, USA)	APRF	Aberdeen, Md.	UNC	Bare, fast, prompt burst	10	1968	
Armed Forces Radiobiology Research Institute (DNA, DOD) ^{3,40}	AFRRJ	Bethesda, Md.	GA	TRIGA-Mk F	1,000	1962	
Fast Burst Reactor Facility (Army Missile Test and Evaluation Directorate, USA)	FBRF	White Sands, N. Mex.	Kaman	Bare, fast, prompt burst	10	1964	
Thermal Test Reactor No. 1 (DOE)	TTR-1	Schenectady, N. Y.	KAPL	Graphite	10	1951	
SHUT DOWN OR DISMANTLED							
Army Materials Research Reactor (Army Materials and Mechanics Research Center, USA) ³	AMRR	Watertown, Mass.	BAC	Pool	5,000	1960	1970
Diamond Ordnance Radiation Facility (Harry Diamond Laboratories, USA) ³⁰	DORF	Forest Glen, Md.	GA	TRIGA-Mk F	250	1961	1977
Naval Research Reactor (USN) ³	NRR	Washington, D. C.	NRL	Pool	1,000	1956	1970
Nuclear Effects Reactor (DOE)	Super KUKLA	NTS, Nev.	LLNL	Prompt burst	Transient	1964	1979
Walter Reed Research Reactor (Walter Reed Army Institute of Research, USA) ³	WRRR	Washington, D. C.	AI	Homogeneous	50	1962	1970

A. Central-Station Electric Power

Name and/or owner	Location	Principal nuclear contractor	Type	Plant, net MW(e)	Reactor, MW(t)	Start-up	Shut-down	Power ¹
OPERABLE								
Belgium, Doel, Unit 1	Antwerp	West.	Pressurized water	392	1192	1975		
Belgium, Doel, Unit 2	Antwerp	West.	Pressurized water	892	1192	1975		
Belgium, Tihange, Unit 1	Huy, Liege	West.	Pressurized water	870	2660	1975		
France, Franco-Belgian Society for Nuclear Energy of Ardennes, SENA	Givet (near Chooz)	West.	Pressurized water	305	1040	1967		
Germany, Kahl Nuclear Power Station (Rhine-Westphalia Power Co., RWE)	Kahl-am-Main	GE	Boiling water	15.6	60	1961		
India, Tarapur Nuclear Power Station, Unit 1	Tarapur (north of Bombay)	GE	Boiling water	200	707	1969		
India, Tarapur Nuclear Power Station, Unit 2	Tarapur (north of Bombay)	GE	Boiling water	200	707	1969		
Italy, Caorso Nuclear Station (ENEL)	Piacenza/Cremona	GE	Boiling water	870	2651	1979		
Italy, Garigliano Nuclear Power Station (Project ENEL of SENN)	Punta Flume (on Garigliano River)	GE	Boiling water	150	506	1964		
Italy, Project Enrico Fermi of SELNI Edisonvolla (ENEL)	Trino Vercellese	West.	Pressurized water	260	825	1965		
Japan, Fukushima Station 1, Unit 1 (Tokyo Electric Power Co.)	Okuma, Fukushima Pref.	GE	Boiling water	439	1380	1971		
Japan, Fukushima Station 1, Unit 2 (Tokyo Electric Power Co.)	Okuma, Fukushima Pref.	GE	Boiling water	760	2381	1974		
Japan, Fukushima Station 1, Unit 6 (Tokyo Electric Power Co.)	Futaba, Fukushima Pref.	GE	Boiling water	1067	3293	1979		
Japan, Japan Power Demonstration Reactor (JAERI) ⁶⁶	Tokai-Mura, Ibaraki Pref.	GE	Boiling water	12	90	1963		
Japan, Mihamana Nuclear Power Station, Unit 1 (Kansai Electric Power Co.)	Mihamana, Fukui Pref.	West.	Pressurized water	320	1031	1970		
Japan, Ohi Nuclear Power Plant, Unit 1 (Kansai Electric Power Co.)	Ohi Fukui Pref.	West.	Pressurized water	1120	3423	1979		
Japan, Ohi Nuclear Power Plant, Unit 2 (Kansai Electric Power Co.)	Ohi Fukui Pref.	West.	Pressurized water	1120	3423	1979		
Japan, Takahama, Unit 1 (Kansai Electric Power Co.)	Takahama, Fukui Pref.	West.	Pressurized water	780	2440	1974		
Japan, Tokai, Unit 2 (Japan Atomic Power Co.)	Tokai-Mura, Ibaraki Pref.	GE	Boiling water	1080	3293	1978		
Japan, Tsuruga Nuclear Power Plant (Japan Atomic Power Co.)	Tsuruga, Fukui Pref.	GE	Boiling water	341	1070	1970		
Korea, Unit 1 (Korea Electric Power Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	587	1728	1978		
The Netherlands, Dodewaard (GKN)	Dodewaard, Betuwe	GE	Boiling water	50	1968			
Spain, Almaraz, Unit 1 (Union Elecricas, S. A.)	Almaraz	West.	Pressurized water	930	2696	1981		
Spain, José Cabrera Nuclear Power Plant, Unit 1	Almonacid de Zorita	West.	Pressurized water	153	510	1969		
Spain, Santa María de Garona Nuclear Power Plant (Centrales Nucleares del Norte, SA, Nuclenor)	Near Bilbao	GE	Boiling water	440	1381	1971		
Sweden, Ringhals, Unit 2 (Swedish State Power Board)	West.	Pressurized water	822	2440	1975			
Sweden, Ringhals, Unit 3 (Swedish State Power Board)	Göteborg	West.	Pressurized water	900	2783	1981		
Switzerland, Beznau, Unit 1 (Nordostschweizerische Kraftwerke AG)	Döttingen	West.	Pressurized water	350	1130	1969		
Switzerland, Beznau, Unit 2 (Nordostschweizerische Kraftwerke AG)	Döttingen	West.	Pressurized water	350	1130	1972		
Switzerland, Mühleberg (Bernische Kraftwerke AG)	Mühleberg (near Bern)	GE	Boiling water	320	947	1972		
Taiwan, Chin-shan, Unit 1 (Taiwan Power Co.)	Chin-shan	GE	Boiling water	604	1775	1978		
Taiwan, Chin-shan, Unit 2 (Taiwan Power Co.)	Chin-shan	GE	Boiling water	604	1775	1979		
Taiwan, Kuosheng, Unit 1 (Taiwan Power Co.)	Wanli Hsiang	GE	Boiling water	951	2894	1981		
BEING BUILT								
Belgium, Doel, Unit 4	Antwerp	West.	Pressurized water	1006	3000	1984		
Belgium, Tihange, Unit 3	Huy, Liege	West.	Pressurized water	1006	3000	1984		
Brazil, Central Electricia de Furnas	Angra Dos Reis	West.	Pressurized water	626	1882			

Italy, ALTO LAZIO, ENEL-1 [Ente Nazionale per l'Energia Elettrica (ENEL)]

Italy, ALTO LAZIO, ENEL-2 [Ente Nazionale per l'Energia Elettrica (ENEL)]

Korea, Unit 2 (Korea Electric Co.)

Korea, Unit 5 (Korea Electric Co.)

Korea, Unit 6 (Korea Electric Co.)

Korea, Unit 7 (Korea Electric Co.)

Korea, Unit 8 (Korea Electric Co.)

Korea, Unit 9 (Korea Electric Co.)

Korea, Unit 10 (Korea Electric Co.)

Mexico, Laguna Verde Station, Unit 1

Mexico, Laguna Verde Station, Unit 2

The Philippines, Republic of, Bagac Nuclear Power Project (National Power Corp.)

Spain, Almaraz, Unit 2 (Union Electricas, S. A.)

Spain, Cofrentes, Unit 1 (Hidroelectrica Espanola, S. A.)

Spain, Fesca, Asco, Unit 1

Spain, Fesca, Asco, Unit 2

Spain, Lemóniz, Unit 1 (Iberduero, S. A.)

Spain, Lemóniz, Unit 2 (Iberduero, S. A.)

Spain, Valdecaballeros, Unit 1 (HE: Sevillana de Electricidad)

Spain, Valdecaballeros, Unit 2 (HE: Sevillana de Electricidad)

Sweden, Ringhals, Unit 4 (Swedish State Power Board)

Switzerland, Kaiseraugst (Kernkraftwerke Kaiseraugst AG)

Switzerland, Leibstadt (Kernkraftwerk Leibstadt)

Taiwan, Kuosheng, Unit 2 (Taiwan Power Co.)

Taiwan, Maanshan, Unit 1 (Taiwan Power Co.)

Taiwan, Maanshan, Unit 2 (Taiwan Power Co.)

Yugoslavia (Savske Elektarne)

PLANNED

Italy, ENEL-5 [Ente Nazionale per l'Energia Elettrica (ENEL)]

Italy, ENEL-7 [Ente Nazionale per l'Energia Elettrica (ENEL)]

Korea, Unit 11 (Korea Electric Co.)

Korea, Unit 12 (Korea Electric Co.)

The Philippines, Republic of, Nuclear Power Project (National Power Corp.) PNPP, Unit 2

Spain, Sayago (Iberduero, S. A.)

Spain, Vandelllos, Unit 2 (ENHER)

Switzerland, Graben (Bernische Kraftwerke AG)

Taiwan, Unit 7 (Taiwan Power Co.)

Taiwan, Unit 8 (Taiwan Power Co.)

Taiwan, Unit 9 (Taiwan Power Co.)

Taiwan, Unit 10 (Taiwan Power Co.)

SHUT DOWN OR DISMANTLED

Germany, Kernkraftwerk-RWE-Bayernwerk, KRBl

Gundremmingen (near Gunzburg)

Italy, ALTO LAZIO, ENEL-1 [Ente Nazionale per l'Energia Elettrica (ENEL)]	Montalto di Castro	GE	Boiling water	982	2894	1986
Italy, ALTO LAZIO, ENEL-2 [Ente Nazionale per l'Energia Elettrica (ENEL)]	Montalto di Castro	GE	Boiling water	982	2894	1987
Korea, Unit 2 (Korea Electric Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	650	1876	1983
Korea, Unit 5 (Korea Electric Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	950	2785	1984
Korea, Unit 6 (Korea Electric Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	950	2785	1985
Korea, Unit 7 (Korea Electric Co.)	Gyema (near Kwang Ju)	West.	Pressurized water	950	2785	1986
Korea, Unit 8 (Korea Electric Co.)	Gyema (near Kwang Ju)	West.	Pressurized water	950	2785	1987
Korea, Unit 9 (Korea Electric Co.)	Bu-Gu (near Wul-Jin)	Fram./West.	Pressurized water	950	2785	1988
Korea, Unit 10 (Korea Electric Co.)	Bu-Gu (near Wul-Jin)	Fram./West.	Pressurized water	950	2785	1989
Mexico, Laguna Verde Station, Unit 1	Laguna Verde	GE	Boiling water	654	1931	1983
Mexico, Laguna Verde Station, Unit 2	Laguna Verde	GE	Boiling water	654	1931	1984
The Philippines, Republic of, Bagac Nuclear Power Project (National Power Corp.)	Luzon, Napot Point	West.	Pressurized water	620	1876	1985
Spain, Almaraz, Unit 2 (Union Electricas, S. A.)	Almaraz	West.	Pressurized water	930	2696	1982
Spain, Cofrentes, Unit 1 (Hidroelectrica Espanola, S. A.)	Cofrentes	GE	Boiling water	930	2894	1984
Spain, Fesca, Asco, Unit 1	Asco	West.	Pressurized water	880	2696	1981
Spain, Fesca, Asco, Unit 2	Asco	West.	Pressurized water	880	2696	1982
Spain, Lemóniz, Unit 1 (Iberduero, S. A.)	Lemóniz	West.	Pressurized water	900	2696	1981
Spain, Lemóniz, Unit 2 (Iberduero, S. A.)	Lemóniz	West.	Pressurized water	900	2696	1984
Spain, Valdecaballeros, Unit 1 (HE: Sevillana de Electricidad)	Valdecaballeros, Badajos	GE	Boiling water	975	2894	1987
Spain, Valdecaballeros, Unit 2 (HE: Sevillana de Electricidad)	Valdecaballeros, Badajos	GE	Boiling water	975	2894	1988
Sweden, Ringhals, Unit 4 (Swedish State Power Board)	Göteborg	West.	Pressurized water	900	2783	1982
Switzerland, Kaiseraugst (Kernkraftwerke Kaiseraugst AG)	Kaiseraugst (near Basel)	GE	Boiling water	925	2894	1990
Switzerland, Leibstadt (Kernkraftwerk Leibstadt)	Leibstadt	GE	Boiling water	942	3012	1984
Taiwan, Kuosheng, Unit 2 (Taiwan Power Co.)	Wanli Hsiang	GE	Boiling water	951	2894	1982
Taiwan, Maanshan, Unit 1 (Taiwan Power Co.)	Heng-chun	West.	Pressurized water	907	2785	1984
Taiwan, Maanshan, Unit 2 (Taiwan Power Co.)	Heng-chun	West.	Pressurized water	907	2785	1985
Yugoslavia (Savske Elektarne)	Krsko	West.	Pressurized water	615	1882	1983
Italy, ENEL-5 [Ente Nazionale per l'Energia Elettrica (ENEL)]	West.	Pressurized water	952	2775	Indef.	
Italy, ENEL-7 [Ente Nazionale per l'Energia Elettrica (ENEL)]	West.	Pressurized water	952	2775	Indef.	
Korea, Unit 11 (Korea Electric Co.)	West.	Pressurized water	900	900	1990	
Korea, Unit 12 (Korea Electric Co.)	West.	Pressurized water	900	900	1991	
The Philippines, Republic of, Nuclear Power Project (National Power Corp.) PNPP, Unit 2	Bataan, Luzon, Napot Point	West.	Pressurized water	620	1876	1985
Spain, Sayago (Iberduero, S. A.)	Savago Zomora	West.	Pressurized water	1075	2785	1989
Spain, Vandelllos, Unit 2 (ENHER)	Falset, Tarragona	West.	Pressurized water	982	2785	1986
Switzerland, Graben (Bernische Kraftwerke AG)	Graben	GE	Boiling water	1140	3579	Indef.
Taiwan, Unit 7 (Taiwan Power Co.)	Yenliao			900-1200	1988	
Taiwan, Unit 8 (Taiwan Power Co.)	Yenliao			900-1200	1989	
Taiwan, Unit 9 (Taiwan Power Co.)	Yenliao			900-1200	1990	
Taiwan, Unit 10 (Taiwan Power Co.)	Yenliao			900-1200	1991	

B. Propulsion

Name	Owner	Designer	Designation	Type	Start-up	Shut-down
OPERABLE SSW for HMS DREADNOUGHT	Great Britain	West.	SSW	Pressurized water	1962	

2. TEST, RESEARCH, AND TEACHING**A. General Irradiation Test**

OPERABLE	Owner	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
Japan, Japan Atomic Energy Research Institute		Tokai-Mura, Ibaraki Pref.	AMF	Heavy water, CP-5	10,000	1960	
Japan, Japan Atomic Energy Research Institute ³⁰		Tokai-Mura, Ibaraki Pref.	GA	TRIGA-ACPR	300	1975	
Netherlands, Reactor Center		Petten	AC	Tank (MTR)	45,000	1961	
Romania, Institute for Nuclear Technologies		Bucharest	GA	TRIGA-ACPR	500	1979	
Romania, Institute for Nuclear Technologies		Bucharest	GA	TRIGA	14,000	1979	
South Africa, Atomic Energy Board		Pelindaba (near Pretoria)	AC	Tank	20,000	1965	
Sweden, Studsvik Energiteknik		Studsvik	AB	Tank (MTR)	50,000	1960	

B. General Research

OPERABLE	Owner	Location	Type	Start-up	Shut-down
Australia, Atomic Energy Commission	AS Inc.	Lucas Heights, New South Wales	UTR-10	15	1961
Austria, Seibersdorf Research Center	AMF	Seibersdorf	Pool	5,000	1960
Colombia, Colombian Institute of Nuclear Affairs	Lockheed	Bogotá	Pool	20	1965
Denmark, Risø National Laboratory (DR-1)	AI	Risø	L-55	2.0	1957
England (Imperial Chemical Industries)	GA	Billingham, Teesside	TRIGA-Mk I	250	1971
Germany, Society for the Utilization of Nuclear Energy in Shipbuilding and Navigation, Inc.	B&W	Geesthacht	Pool	5,000	1958
Greece, Atomic Energy Commission	AMF	Athens	Pool	1,000	1961
Indonesia, National Atomic Energy Agency	GA	Bandung	TRIGA-Mk II	1,000	1964
Indonesia, National Atomic Energy Agency	GA	Jogjakarta	TRIGA-Mk II	250	1979
Israel, Atomic Energy Commission	AMF	Natal Soreq	Pool	5,000	1960
Italy, Center for Military Application of Nuclear Energy	B&W	Near Pisa	Pool	Pulsing	1963
Italy, National Committee for Nuclear Energy	AC	Ispira	Heavy water, tank	5,000	1959
Italy, National Committee for Nuclear Energy	AMF	Padua	Pool	Neglig.	1971
Italy, National Committee for Nuclear Energy	GA	Rome	TRIGA-Mk II	1,000	1960
Italy, SORIN Nuclear Center	AMF	Saluggia	Pool	7,000	1959

Korea, Advanced Energy Research Institute	Seoul	GA	TRIGA-Mk II	250	1962
Korea, Advanced Energy Research Institute	Seoul	GA	TRIGA-Mk III	2,000	1972
Mexico, National Commission for Nuclear Energy ³⁰	Salazar	GA	TRIGA-Mk III	1,000	1968
Pakistan, Atomic Energy Commission	Islamabad	AMF	Pool	5,000	1965
Portugal, National Laboratory of Engineering and Industrial Technology	Sacavém	AMF	Pool	1,000	1961
Switzerland, Institute for Reactor Research ⁶⁸	Wuerenlingen	ORNL	Pool	5,000	1957
Thailand, Office of Atomic Energy for Peace ^{30,69}	Bangkok	GA	TRIGA-Mk III	2,000	1977
Turkey, Atomic Energy Commission	Istanbul	AMF	Pool	1,000	1962
Turkey, Technical University of Istanbul	Istanbul	GA	TRIGA-Mk II	250	1979
Venezuela Institute for Scientific Research ³⁰	Caracas	GE	Pool	3,000	1960
Yugoslavia, Josef Stefan Nuclear Institute ³⁰	Ljubljana	GA	TRIGA-Mk II	250	1966
Zaire (Regional Center for Nuclear Studies)	Kinshasa	GA	TRIGA-Mk II	1,000	1959
BEING BUILT					
Bangladesh, Institute of Nuclear Technology	Dacca	GA	TRIGA-Mk II	3,000	
Malaysia, Tun Ismail Atomic Research Centre	Kuala Lumpur	GA	TRIGA-Mk II	1,000	
Morocco, Mohammed V University	Rabat	GA	TRIGA-Mk I	100	
Philippines, Philippine Atomic Energy Commission	Quezon City	GA	TRIGA Conversion	1,000	
SHUT DOWN OR DISMANTLED					
Denmark, Risø National Laboratory (DR-2)	Risø	FW	Tank	5,000	1958
Japan, Japan Atomic Energy Research Institute	Tokai-Mura, Ibaraki Pref.	AI	L-54	50	1975
Spain, Nuclear Energy Board	Moncloa	GE	Pool	3,000	1957
Vietnam, Vietnam Institute of Nuclear Research	Dalat	GA	TRIGA-Mk II	250	1963
West Berlin, City of (Institute for Nuclear Research)	West Berlin	AI	L-54	50	1973
Iran, University of Tehran					
Italy, University of Milan					
Italy, University of Palermo					
Italy, University of Pavia ³⁰					
Japan, Kinki University					
Japan, Musashi College of Technology					
Japan, Rikkyo University					
Korea, University of Kyang Hee					
OPERABLE					
Austria, Vienna Polytechnic Institute ³⁰	Vienna	GA	TRIGA-Mk II	250	1962
Brazil, University of Minas Gerais	Belo Horizonte	GA	TRIGA-Mk I	250	1960
Brazil, University of São Paulo	São Paulo	B&W	Pool	5,000	1957
Canada, McMaster University	Hamilton, Ont.	AMF	Pool	5,000	1959
China, Republic of (National Tsing-Hua University)	Hsinchu	GA	TRIGA Conversion	1,000	1977
Finland, Institute of Technology ³⁰	Helsinki	GA	TRIGA-Mk II	250	1962
Germany, Association for Radiation Research ⁷¹	Munich	GA	TRIGA-Mk III	1,000	1972
Germany, Institute for Nuclear Medicine ⁷¹	Heidelberg	GA	TRIGA-Mk I	250	1966
Germany, Johannes Gutenberg University of Mainz ³⁰	Mainz	GA	TRIGA-Mk II	100	1965
Germany, Medical College of Hanover ⁷¹	Hanover	GA	TRIGA-Mk I	250	1973
Germany, Technical University of Munich	Munich	AMF	Pool	4,000	1957
Iran, University of Tehran	Tehran	AMF	Pool	5,000	1967
Italy, University of Milan	Milan	AI	L-54	50	1959
Italy, University of Palermo	Palermo	AGN	201-110	Neglig.	1960
Italy, University of Pavia	Pavia	GA	TRIGA-Mk II	250	1965
Japan, Higashi-Osaka	Higashi-Osaka	AS Inc.	UTR-10	Neglig.	1961
Japan, Kawasaki	Kawasaki	GA	TRIGA-Mk II	100	1963
Japan, Yokosuka	Yokosuka	GA	TRIGA-Mk II	100	1961
Korea, Seoul	Seoul	AGN	201	Neglig.	1982

C. University Research and Teaching

2. TEST, RESEARCH, AND TEACHING

C. University Research and Teaching (Continued)

Owner	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE (Continued)						
Netherlands, Delft Technical University ⁷²	Delft	AMF	Pool	2,000	1963	
Switzerland, University of Basel ⁷³	Basel	AGN	211-100	Neglig.	1958	
Switzerland, University of Geneva ⁷⁴	Geneva	AGN	201-111	Neglig.	1958	
United Kingdom, Queen Mary College, London University	London	AS Inc.	UTR-B	100	1965	
United Kingdom, Scottish Research Reactor Center	East Kilbride	AS Inc.	UTR-100	300	1963	
Uruguay, University of Montevideo ⁷⁵	Montevideo	Lockheed	Pool	1,000	1973	
Zaire, University of Lovanium ⁷⁶	Kinshasa	GA	TRIGA-Mk I	1,000	1959	
SHUT DOWN OR DISMANTLED						
Germany, Brown Boveri/Krupp ⁶⁷	Jülich	AI	L-77A	0.01	1964	1977
Germany, Universities of Frankfurt and Darmstadt	Frankfurt	AI	L-54	50	1958	1968

1. IDENTIFICATION OF FACILITIES

PART V CRITICAL ASSEMBLY FACILITIES

Abbreviation	Name and location of facility	Operator	No. of control panels	No. of cells
ANL	Argonne National Laboratory (DOE), Argonne, Ill.	ANL	2	2
ANL-IDAHO	Argonne National Laboratory, Idaho Division (DOE), INEL Site, Idaho	ANL	1	1
ARMF-1	Advanced Reactivity Measurement Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
ATRC	Advanced Test Reactor Critical Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
Bettis	Bettis Atomic Power Laboratory (DOE), Pittsburgh, Pa.	West.	3	3
CFRMF	Coupled Fast Reactor Measurement Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
CX-10	Critical Facility-10, Lynchburg Research Center, Lynchburg, Va.	B&W	2	1
KAPL	Knolls Atomic Power Laboratory (DOE), Schenectady, N. Y.	GE	5	5
LANL	Los Alamos National Laboratory (DOE), Los Alamos, N. Mex.	LANL	3	3
Lockheed	Lockheed Aircraft Co., Critical Facility for RER, Dawsonville, Ga. ³	Owner	1	1
OR-CFF	Oak Ridge Critical Experiment Facility (DOE), Oak Ridge, Tenn.	UCC-ND	3	3
ORNL-PCA	Pool Critical Assembly, BSF Pool (DOE), Oak Ridge, Tenn.	ORNL	1	1
PNL-CML	Critical Mass Laboratory (DOE), Richland, Wash.	PNL	1	1
Rensselaer	Rensselaer Polytechnic Institute, Troy, N. Y. ³	Owner	1	1
RFP-NSF	Nuclear Safety Facility, Rocky Flats Plant (DOE), Colo.	RI	1	1
UNC	United Nuclear Corporation, Development Division, Pawling, N. Y. ³	Owner	4	3

2. IDENTIFICATION OF EXPERIMENTS AND STUDIES

A. Civilian

	Facility	Subject of current experiment or study	Designation	Start-up
OPERABLE				
ANL		Basic fast reactor studies and mock-up for LMFBFR	ZPR-6	1963
ANL ⁷⁶		Basic fast reactor studies and mock-up for LMFBFR	ZPR-9	1967
ANL-IDAHO		Basic fast reactor studies and mock-up for LMFBFR	ZPPR	1969
Bettis		LWB physics ⁷⁹	LWBCC	1963
CML		Plutonium criticals	Solution	1961
CX-10		Close storage of spent reactor fuel	SSRF	1977
INEL, ARMF-I		Reactor-physics constants and reactivity changes caused by test-reactor irradiation	ARMF-I	1960
INEL, ATRC		ATR physics, core-loading and core-design measurements	ATRC	1964
INEL, CFRMF		Studies of differential cross sections to test calculational methods	CFRMF	1968
LANL, Kiva I Annex		Solution high energy burst assembly	SHEBA	1980
LANL, Kiva I		Cold critical for gas core reactor studies	Mars	1974
LANL, Kiva I		Flexible split table assembly	Honeycomb	1956
LANL, Kiva II		Critical-configuration safety and neutronic tests	Comet	1952
LANL, Kiva II		Plated bare-plutonium sphere	Jezebel	1954
LANL, Kiva II		Spherical metal cores in thick metal reflector	Flattop	1957
LANL, Kiva II		U(10)-metal cylinder in thick metal reflector	Big Ten	1972
LANL, Kiva III		Cold critical for instrumentation testing	Parka	1963
LANL, Kiva III		Fast neutron irradiation, pulse capability	Godiva-IV	1967
LANL, Kiva III		Fast neutron irradiation, pulse capability	SKU-A	1978
OR-CCEF, Building 9213, Cell W		HFIR core reactivity measurements		1950
ORNL-PCA, Building 3010		Physics research on reactivity effects and training	PCA	1958
PNL-CML		Plutonium criticals	Horizontal	1961
Rensselaer		Critical experiment assembly		1966
UNC		Proff test facility	PTF	1967

B. Military

	Facility	Subject of current experiment or study	Designation	Start-up
OPERABLE				
Bettis		Surface-ship physics ⁷⁷	SS-CF	1957
Bettis		High-temperature physics and mock-up	HTTF	1959
KAPL		Full core physics experiment	FCPE	1970
KAPL		Flexible critical experiments	FPR	1956
KAPL		High-temperature high-pressure physics and mock-up	PTR	1958
Lockheed		RER core configurations	CERF	1958
RFP-NFS		Critical-configuration safety tests	Horizontal	1965
RFP-NFS		Critical-configuration safety tests	Vertical	1965
RFP-NFS		Critical-configuration safety tests	Solution	1965
RFP-NFS		Critical-configuration safety tests	Tank	1965

FOOTNOTES

1. Power-capacity figures are based on the best available information. In all instances thermal capacity of the nuclear reactor is given; the electrical output, when shown, is the net electrical capacity of the power plant. Where a plant has a stretch capacity, the initial capacity is given until the stretch value is approved.
 2. The first core for the Shippingport station began power operation in 1957, with a capacity rating of 60 MW(e). The second core began power operation in 1965, with a capacity rating of 90 MW(e), and operated until its shutdown in 1974. The Shippingport station now has a light-water breeder reactor (LWBR) core, rated at 60 MW(e) net capacity, which went critical on Aug. 26, 1977. The station with the LWBR core installed was released for routine commercial power generation on Dec. 2, 1977. Owned by the Department of Energy, the reactor plant is scheduled to be shut down at the end of 1982.
 3. This facility is regulated by the Nuclear Regulatory Commission and has been issued an operating license (or authorization) or a construction permit, or an application for same has been submitted.
 4. This project is under the Power Demonstration Program.
 5. In the Consolidated Edison Indian Point Station, the 615 MW(t) is increased by an oil-fired superheater to produce 265 MW(e) net.
 6. The Hallam Nuclear Power Facility was shut down in September 1964 due to moderator-can failures. Entombment of the reactor was completed in 1968.
 7. The last CVTR shutdown occurred Jan. 24, 1967. A license amendment issued June 14, 1967, authorizes CVNPA to possess but not operate the CVTR.
 8. The dismantlement program for the Piqua Nuclear Power Facility was completed in February 1969.
 9. The Pathfinder Plant has been shut down since November 1967. On Sept. 9, 1968, Northern States Power Company announced plans to install gas-fired boilers for operation the summer of 1969.
 10. The Elk River Reactor was shut down due to technical problems in February 1968; in 1974, dismantling and removal of this facility was completed.
 11. N Reactor, a DOE-owned reactor for production of special nuclear materials, also produces steam that is supplied to the adjacent electric generating plant, owned and operated by Washington Public Power Supply System (WPPSS). Initial electric-power generation began Apr. 8, 1966. Gross power output of 800 MW(e) utilizing N Reactor steam was achieved on Dec. 9, 1966, and gross generation of 860 MW(e) was achieved in 1972.
 12. Midland Unit 1 supplies 3,625,000 pounds per hour of process steam, and Unit 2 supplies 425,000 pounds per hour.
 13. This facility was originally built and operated in 1954 as the Boiling Reactor Experiment No. 2 (BORAX-2). With the addition of a turbogenerator, it operated during 1955 as BORAX-3 and on July 17, 1955, produced sufficient electricity to light and power Arco, Idaho—a U. S. first. BORAX-4, a further modification, operated from December 1956 to June 1958 when the experiment was shut down.
 14. OMRE demonstrated the technical and economic feasibility of using liquid hydrocarbon terphenyls as coolant and/or moderator.
29. Ownership of this reactor was transferred to North American Rockwell in December 1971 and was redesignated the Nuclear Examination Reactor or L-85 rather than AE-6. The AE-6, also designated WBNs, was built and first operated at Downey, Calif. It was moved to Santa Susana in 1956.
 30. This TRIGA reactor is capable of being pulsed and of steady-state operation.
 31. The HPRR was previously operated in the Nevada BREN facility. It is now installed in the Dosimetry Applications Research Facility.
 32. The KEWB reactor was operated by AI from 1956 to 1967 as the Kinetic Experiment on Water Boilers.
 33. This reactor was operated in the USAEC Atoms for Peace Exhibit in Vienna, Austria, in June 1963; in Belgrade, Yugoslavia, in September 1963; in Madrid, Spain, in April 1964; in Lisbon, Portugal, in April 1965; in Utrecht, Netherlands, in March 1966; in Dublin, Ireland, in September–October 1966; Ankara, Turkey, in April–May 1967; Tehran, Iran, in November–December 1967; Taipei, Taiwan, in April–May 1968; Seoul, Korea, in September–October 1968; Manila, Philippines, in February–March 1969; and Bucharest, Romania, in October 1969. The reactor instrumentation has been shipped to Howard University, Washington, D. C., and the fuel is currently in storage at Oak Ridge pending shipment to Howard University.
 34. In 1963 the Manhattan Engineer District disassembled Chicago Pile 1 and rebuilt it at Palos Park, Ill., as Chicago Pile 2. CP-2 had a thermal-power level of 10 kW.
 35. This reactor was shipped abroad for exhibition purposes in the USAEC Atoms for Peace Exhibit in the Tokyo International Trade Fair in 1959, and in Cairo, Egypt, and Lahore, Pakistan, in 1960.
 36. This TRIGA-Mk II was operated at the New Delhi World Agricultural Fair in 1960. It has been dismantled for storage in California by Gulf Oil Corporation.
 37. In 1965 and 1966 this reactor was operated at Sandia, N. Mex., as SNARE. Prior to that time it operated at INEL as the Shield Test Pool Reactor (Susie) in the Aircraft Nuclear Propulsion Program from 1959 to 1962. It was shut down in 1966 and transferred to Louisiana State University in June 1966, where it was never assembled.
 38. Until mid-1967 FRAN was operated by LLNL at the Nevada Test Site, and until 1970 it was operated in the former ML-1 reactor area at INEL. In mid-1970 it was transferred back to LLNL.
 39. After the assembly and operation of this reactor in the government exhibit at Geneva in September 1958, it was dismantled and returned to ANL, where it was rebuilt as a 250-kW(t) Juggernaut.
 40. The RER was previously used in the terminated Aircraft Nuclear Propulsion Program. A license authorizing Lockheed to operate the reactor as a commercial facility was issued in July 1962, and in August 1962 the USAF transferred the facility to the General Services Administration. Lockheed acquired title to the facility in March 1965.
 41. This reactor was previously designated STF for SNAP Shield Test Facility.

15. The EBOR reactor experiment was terminated in December 1966 prior to the completion of construction.
16. In a trial run on Dec. 21 and 22, 1951, EBR-1 generated the world's first electric power from nuclear energy and was the first to demonstrate, in July 1953, the feasibility of breeding and the compatibility with breeding economy of sodium-potassium alloy as a liquid-metal coolant. It operated with a plutonium-bearing core (Mark IV) from November 1962 to December 1963. The reactor was decommissioned and dismantled early in 1964. The facility was dedicated as a historic landmark Aug. 26, 1966. It is open to the public June 14 to September 15 annually, beginning in 1975.
17. SRE operated at 20 MW(t) until shut down in February 1964 for modification to permit an increase in power level to 30 MW(t). On Dec. 2, 1966, deactivation of SRE was announced.
18. The EGCR project was terminated in January 1966 prior to the completion of construction.
19. EOGR construction was terminated in December 1962. The facility was mothballed prior to operation.
20. The EBWR achieved 100,000 kW(t) on Nov. 11, 1962. Operation of EBWR in the Boiling Water Program was closed out in December 1962. The reactor was used in support of the Plutonium Recycle Program and attained criticality using plutonium as its principal fuel on Sept. 22, 1965. In support of that program, it operated at power levels as high as 70,000 kW(t). Operation in that program was completed in June 1967.
21. Footnote deleted.
22. SI0FS-4 operated in orbit during April–May 1965. Operation terminated unexpectedly after 43 days at power, probably owing to a sequence of failures of electrical components of the spacecraft with resulting spurious commands shutting down the reactor. An identical ground-test unit, S10FS-3, operated successfully for more than a year before being shut down in 1966.
23. Reactor was shut down in 1973 for modifications and insertion of Sodium Loop Safety Facility (SLSF) loop. Operation resumed in 1975. Dismantled in 1981 and no longer operable.
24. In August 1958 the MTR was operated with an experimental plutonium core at power levels up to 30,000 kW(t). It demonstrated the ability of plutonium fuel elements to perform satisfactorily in a high-flux research or test reactor. Operation as a test reactor was terminated on June 30, 1969, and a ^{240}Pu (Phoenix) core was run in FY 1970. Reactor decommissioned in 1974.
25. The SNAPTRAN series of experiments was designed to develop, in a land-based environment, safety information on space auxiliary power reactors through excursion testing at various temperatures and rates of reactivity insertion. The destructive experiments approach the maximum credible accidents postulated for SNAP reactor systems.
26. Footnote deleted.
27. This reactor is basically the same as the SNAP-10A Transient Test Reactor No. 1 (SNAPTRAN-1) that operated at Idaho National Engineering Laboratory (INEL) from 1963–1965. It was moved from INEL to its present location in the SNAP Environmental Test Facility. It was used there to evaluate the effects of separated ^{155}Gd as a burnable poison and as a shutdown agent in the event of water immersion. It was defueled in 1971 and placed on standby. The reactor was transferred to Los Alamos, N. Mex., in 1973.
28. The BSR-2, which became operable in 1959, is a stainless-steel- UO_2 core that can be used alternately in the same facility with BSR-1 (aluminum-alloy core).

42. The APFA-III was previously operated as the KUKLA Prompt Critical Assembly at Lawrence Livermore National Laboratory at Livermore, Calif.
43. This reactor was formerly called the Latin American Demonstration Reactor and was operated initially in São Paulo, Brazil, in October 1969. It is currently in storage at Oak Ridge.
44. AGN-201-102 was operated at Oklahoma State University, Stillwater, Okla., from 1957 until transferred to Tuskegee Institute in 1972.
45. AGN-201-104 operated at the University of Akron (Ohio) from 1957 until transferred to the Georgia Institute of Technology in 1967. Operations at that facility began in 1968.
46. AGN-201-112 was operated at the University of California, Berkeley, beginning in 1957. The University of New Mexico filed an application in April 1966 for transfer and reconstruction of the reactor at a site on its campus. The reactor achieved criticality at the University of New Mexico on Oct. 7, 1966.
47. The Center for Environmental and Energy Research (formerly Puerto Rico Nuclear Center).
48. The University of Wisconsin reactor has been modified for 1000-kW steady-state operation with a TRIGA-type core. Power level was 250 kW prior to modification in 1967.
49. The Nuclear Science Center Reactor at Texas A&M University has been modified for 1000-kW steady-state operation with a TRIGA-type core. Power level was 100 kW prior to modification in 1966.
50. In 1967 the original MTR-type core of the Washington State University reactor was replaced by a modified TRIGA-type core and control system, and the steady-state power level was increased from 100 to 1000 kW(t).
51. From 1955 to 1965 the Penn State reactor was operated as a 200-kW(t) pool-type reactor fueled with MTR-type elements.
52. The AGN-201P-103 was operated at San Ramon, Calif., by Aerojet-General Corporation from 1957 to 1966. In April 1967 Idaho State University applied for a license to operate the reactor at Pocatello, Idaho.
53. The core of the Michigan State University reactor operated in the University of Illinois TRIGA facility from 1960 until transferred in 1968.
54. California State Polytechnic College, San Luis Obispo, Calif., in December 1971 received a permit to relocate AGN-201-100 and operate it on CSPC's campus. The unit previously was operated starting in 1956 at the Naval Postgraduate School, Monterey, Calif. In 1980, AGN-201-100 was shut down and decommissioned.
55. This reactor was originally operated by North Carolina State University as the Raleigh Research Reactor (RRR). It was transferred in March 1966 to Mississippi State University for reactivation. The RRR was dismantled by N. C. State in 1963. Owing to funding problems, this reactor was never activated. Late in 1981 it was shipped to Barnwell, S. C., for disposal.
56. In 1957–1962, AGN-201M-105 was owned and operated by the National Naval Medical Center, Bethesda, Md. Title to the reactor was transferred to New York University early in 1964. A license to operate was issued in April 1967.
57. Reactors in the Army Power Program are identified by symbolic nomenclature to reflect mobility characteristics, power range, development sequence, and field sequence. The first capital letter indicates mobility characteristics: S (stationary operation), not designed for subsequent relocation; P (portable), semimobile, stationary operation, capable of being dismantled and reassembled for use in successive locations; and M (mobile), capable of being moved intact, or virtually intact, for use in successive locations. The second capital letter indicates the power range as measured by design capacity for continuous operation: L (low), 100 to 1000

FOOTNOTES (Continued)

- kW(e); M (medium), 1000 to 10,000 kW(e); and H (high), 10,000 kW(e) or more. Arabic numerals indicate order in which plants having the same mobility and power characteristics are initiated. If not followed by an additional letter, the designation indicates a prototype or pilot plant. The last capital letter (when present) indicates the alphabetical order in which field plants of a specific type are initiated.
58. The MH-1A was installed in the STURGIS (formerly the Liberty Ship CHARLES H. CUGLE) at Mobile, Ala. Acceptance testing was performed at Fort Belvoir, Va., from April 1967 to June 27, 1967, when the Army accepted the plant from the Contractor. In late July 1968 the plant was deployed to Gatun Lake, Panama Canal Zone, and began producing power to the Panama Canal power grid on Oct. 5, 1968.
59. The PM-2A was shut down on July 9, 1963, and dismantled during April–June 1964. The reactor vessel was then used at INEL for NDT (metal ductility transition temperature) investigations of materials that had been subjected to long-term irradiation. Defects were sequentially introduced into the vessel wall during a series of tests involving pressure and temperature conditions which exceeded the range permitted in operating nuclear power plants. The final test on Nov. 18, 1966, resulted in a brittle fracture under conditions even more severe than those which had been previously predicted to cause failure. The test program confirmed laboratory data on the adequacy of reactor-operating limitations to prevent brittle fracture of a pressure vessel.
60. The Army made the determination to shut down the SM-1A because the plant's demonstration and R&D missions had been successfully completed and because of the ready availability of cheaper conventional power at the site.
61. The abbreviations used here are defined as follows: SSN, Submarine (Nuclear Propulsion); SSBN, Fleet Ballistic Missile Submarine (Nuclear Propulsion); DLGN, Guided Missile Frigate (Nuclear Propulsion) (all DLGNs were redesignated CGN on July 1, 1975); CGN, Guided Missile Cruiser (Nuclear Propulsion); CVAN/CVN, Aircraft Carrier (Nuclear Propulsion).
62. The USS SEAWOLF, originally commissioned with a sodium-cooled reactor in March 1957, was recommissioned with a pressurized-water reactor on Sept. 30, 1960.
63. The USS THREACHER (SSN593) was lost in the Atlantic on Apr. 10, 1963. The USS SCORPION (SSN589) was lost in the Atlantic on May 21, 1968.
64. The TORY IIC was successfully tested at full design power during May 1964. Subsequent to cancellation of the Pluto program on July 1, 1964, the reactor was placed in the Pluto disassembly building at NTS for storage. In 1974 the reactor was transferred to the NERVA disassembly area for disassembly.
65. In addition to the export power reactors listed, Westinghouse provided the design and furnished nuclear components, including fuel elements, control rods, and instrumentation for the 11.5-MW(e) Belgium BR-3 pressurized-water reactor at Mol.
66. JAERI is being rebuilt as a 90-kW(t) boiling-water research reactor (JPDR-II).
67. This L-77 reactor was operated in the commercial exhibit of the 1958 International Conference in Geneva and in the USAEC Atoms for Peace Exhibits in
- Beirut, Lebanon, in October 1961; in Athens, Greece, in May 1962; and in Bangkok, Thailand, in November 1962.
68. This is the 1955 Geneva Conference reactor rebuilt with increased power and now operating at Wuerchelingen, Switzerland.
69. The Thai research reactor (TRR-1), built by Curtiss-Wright and started up in 1962, originally operated at 1000 kW(t). In June 1975 the TRR-1 was shut down for conversion to TRR-1/M1 a TRIGA-Mark III system adapted for pool installation. The TRR-1/M1, with a power level of 2000 kW(t)/2000 MW pulsing, was commissioned in November 1977.
70. This TRIGA reactor was operated at the 1958 International Conference in Geneva prior to shipment to the University of Lovanium. It began operating at the University of Lovanium in June 1959. It is the first reactor to be operated on the African continent.
71. This reactor was sold through Gulf Oil licensee, Gutehoffnungshütte Sterkrade A.E.
72. The Netherlands research reactor was originally operated at the Amsterdam International Exhibition in June 1957; major portions of the exhibition reactor system were used to fabricate the present reactor.
73. This reactor was operated in the International Science Section of the Brussels International Exhibition, Apr. 15 to Oct. 1, 1958, prior to transfer to the University of Basel.
74. The AGN-201-111 was operated first in the USAEC Atoms for Peace Exhibit in Rome, Italy, in July 1958 and later in the commercial exhibit of the 1958 International Conference in Geneva prior to transfer to the University of Geneva.
75. Prior to its sale to the University of Montevideo in 1966, this reactor was part of the USAEC Exhibit Program. It was in Buenos Aires, Argentina, in the fall of 1960; in Rio de Janeiro, Brazil, in the spring of 1961; in Lima, Peru, in the fall of 1961; in Mexico City in the spring of 1962; in Santiago, Chile, in the fall of 1962; in Bogotá, Colombia, in the spring of 1963; and in Montevideo, Uruguay, in the fall of 1963. The unit became operational in 1972.
76. Zero-power experiments of historical interest previously conducted in ANL facility cells include the NAUTILUS core design (ZPR-1), the Savannah River reactor design (ZPR-2), and a series of fast-neutron studies (ZPR-4) and interactions between two basic systems (ZPR-5). The following experiments have been performed in the ZPR-7 facility: thorium, uranium, deuterium criticals (THUD), and a series of flux-trap criticals for the Argonne High Flux Research Reactor.
77. The cell has one control panel for two pots. Experiments may be operated in either pot but not in both simultaneously.
78. This reactor was operated at the Puerto Rico Nuclear Center from 1960 to October 1976; it was converted to the TRIGA-FLIP in 1972. It has been moved to the Neutron Radiography Facility at the National Engineering Laboratory in Idaho.
79. The EBR-II reactor has recently become a major irradiation facility for the LMFBIR program.
80. In 1977 the Annular Core Pulsed Reactor (ACPR) was shut down. After replacement of fuel and other modifications, the unit was renamed the Annular Core Research Reactor.

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